Shelterbelt Planting and Farmstead Beautification

Alberta
AGRICULTURE
AGDEX 271/17-1

84- 3344 /

Copies of this publication may be obtained from:

Print Media Branch
Alberta Agriculture
7000 - 113 Street
Edmonton, Alberta, T6H 5T6
OR
Alberta Agriculture's district offices

1983 12 10M

Shelterbelt Planting and Farmstead Beautification

by

H.T. Oosterhuis

Alberta
AGRICULTURE
Plant Industry Division

SHELTERBELT PLANTING AND FARMSTEAD BEAUTIFICATION

CONTENTS

	PAGE
SHELTERBELT PLANTING IN ALBERTA	
Introduction	1
Trees and Shrub Species for Shelterbelt Planting	2
Mature Height and Lifespan of Shelterbelt Trees	2
Growth Rate and Useful Life of Shelterbelt Trees	3
Age and Size of Shelterbelt Transplants Available	3
Spacing Recommendations	4
Field Shelterbelts	6
Roadside Hedges	6
Additional Reasons for Planting Shelterbelts	6
Description of Species	7
Poplars	7
Trembling aspen	7
Balsam poplar	8
Plains cottonwood	8
Northwest poplar	8
Griffin poplar	9
Brooks #6	9
Willows	10
Acute leaf willow	10
Laurel leaf willow	10
Golden willow	11
Peach leaf willow	11
Manitoba maple	12
Green ash	12
Bur oak	13
White birch	13
Mayday	14
Chokecherry	14
Russian olive	15
Sea buckthorn	15
Hawthorn	16
Caragana	16
Lilacs	17
Common lilac	17
Villosa lilac	17
Tartarian honeysuckle	18
Dogwood	18
Hedgerose	19
Altai rose	19
Silver buffaloberry	20
Cherry prinsepia	20
White spruce	21
Colorado spruce	21
Norway spruce	22
Lodgepole pine	22
Scots pine	23
Siberian larch	23
The Conservation Bundle	24, 25, 26

FARMSTEAD BEAUTIFICATION 27
Introduction 27
Objectives of Beautification 27
Distinctive Parts of the Farmstead 28
Action Plan 30
Materials for Landscaping 33
Listing of Woody Ornamentals 33
The Use of Trees and Shrubs in the Landscape 34
Tall Shade Trees — Coniferous 36
White spruce 36
Colorado spruce 36
Norway spruce 37
Lodgepole pine 37
Scots pine 38
Bull pine 38
Siberian larch 39
Tall Shade Trees — Deciduous 39
Nuisance Effects of Trees 39
Balsam poplar 40
Trembling aspen 40
Plains cottonwood 41
Northwest poplar 41
Griffin poplar 42
Brooks #6 poplar 42
Laurel leaf willow 43
Sharp leaf willow 43
Peach leaf willow 44
Golden willow 44
Siberian white willow 45
Other Tall Shade Trees 45
Paper birch 45
Cut-leaved weeping birch 46
American elm 46
Manchurian elm 47
Green ash 47
Black ash 48
Bur oak 48
American basswood 49
Manitoba maple 49
Amur maple 50
Smaller Shade Trees 50
Common chokecherry 50
Shubert chokecherry 51
Amur chokecherry 51
Showy mountain ash 52
Mayday tree 52
Wild plum 53
Hawthorn 53
Siberian flowering crabapple 54
Rosybloom crabapple 54
Flowering Shrubs 55
Common lilac 55
Late lilac 55
Albol currant 56
Saskatoon 56
Double flowering plum 57
Korean bush cherry 57
Nanking cherry 58
Tartarian honeysuckle 58
Waterton mock orange 59
Red osier dogwood 59
Hansa rose 60

Altai rose 60
Hedge rose 61
Froebel's spirea 61
Oriental spirea 62
Highbush cranberry 62
Shrubby cinquefoil 63
Shrubs with Special Foliage Features 63
Red elder 63
Golden elder 64
Fernleaf caragana 64
Silver leaved dogwood 65
Golden ninebark 65
Purple leaved sandcherry 66
Russian olive 66
Sea buckthorn 67
Silver buffaloberry 67
Climbers 68
Virginia creeper 68
Jackman clematis 68
Dropmore scarlet trumpet honeysuckle 69
Siberian pea shrub 69
Cotoneaster 70
Pygmy caragana 70
Cherry prinsepia 71
Small Evergreens 71
Golden Pfitzer juniper 71
Dunvegan blue juniper 72
Rocky Mountain juniper 72
Mugo pine 73
Columnar white cedar 73
Nest spruce 74
Groundcovers 74
Bearberry 74
Periwinkle 75
Glossary of Landscaping Terms 76
Recommended Reading 76
Quick Guide to Plant Characteristics 78

SHELTERBELT PLANTING IN ALBERTA

INTRODUCTION

Establishing shelterbelts for protecting farm operations is commonly practised on the Canadian prairies. This publication will inform the reader about the tree and shrub species which can be used to develop a functional windbreak, and the section on farmstead beautification gives guidelines for an orderly development of the farm building site. That section discusses the use of woody ornamentals in landscaping the farmhouse.

Farmers in Alberta are able to obtain most of the listed shelterbelt species from Alberta Agriculture. The details of this service can be obtained from Alberta Agriculture's extension offices. Trees and shrubs are, as a rule, available free of charge to bona fide farmers. Farmers receiving trees agree to pay for the shipping charges, and to plant and care for the trees. Planting sites have to be free of weeds before and after planting. Shelterbelt trees are not intended for future resale.

Stock for ornamental plantings is readily available from the commercial nursery trade.

In the accompanying table, the woody plants available for shelterbelts are grouped together as follows:

Tall deciduous — Broadleaved trees, which reach to a height of more than 10 m at maturity.

Small deciduous — Broadleaved trees which grow to a height of up to 10 m.

Hedge plants — Woody shrubs between 2 and 4 m, usually planted as hedges.

Coniferous trees — Cone producing trees, often referred to as evergreens, growing to 20 m or more in height.

Conservation bundle — Fruit and berry producing shrubs.

The following types and species of woody plants are available for shelterbelt establishment:

TREES AND SHRUB SPECIES FOR SHELTERBELT PLANTING

TYPE	COMMON NAME	SCIENTIFIC NAME
Tall Deciduous	Poplar – Northwest	*Populus* x 'Northwest'
	– Brooks #6	*Populus* x 'Brooks 6'
	– Griffin	*Populus* x 'Griffin'
	– plains cottonwood	*Populus sargentii*
	Willow – laurel leaf	*Salix pentandra*
	– acute leaf	*Salix acutifolia*
	– golden	*Salix alba vitellina*
	– peach leaf	*Salix amygdaloides*
	Manitoba maple	*Acer negundo*
	Green ash	*Fraxinus pensylvanica*
	Bur oak	*Quercus macrocarpa*
	White birch	*Betula papyrifera*
Small Deciduous	Mayday	*Prunus padus*
	Chokecherry	*Prunus virginiana*
	Russian olive	*Eleagnus angustifolia*
	Sea buckthorn	*Hippophae rhamnoides*
	Hawthorn	*Crataegus* sp.
Hedge Plants	Caragana	*Caragana arborescens*
	Lilac – villosa	*Syringa villosa*
	– common	*Syringa vulgaris*
	Honeysuckle	*Lonicera tatarica*
	Dogwood	*Cornus stolonifera*
	Rose – hedge	*Rosa* sp.
	– altaica	*Rosa spinosissima*
	Silver buffaloberry	*Shepherdia argentia*
	Cherry prinsepia	*Prinsepia sinensis*
Coniferous Trees	Spruce – white	*Picea glauca*
	– Colorado	*Picea pungens*
	– norway	*Picea abies*
	Pine – lodgepole	*Pinus contorta*
	– Scots	*Pinus sylvestris*
Siberian larch	Larix siberica	
Conservation Bundle	Cherry – Nanking	*Prunus tomentosa*
	– sand	*Prunus besseyi*
	– Korean bush	*Prunus japonica*
	– pin	*Prunus pensylvanica*
	– black	*Prunus nigra*
	– Mongolian	*Prunus fruticosa*
	– Dropmore	*Prunus 'Dropmoriana'*
	Saskatoon	*Amelanchier alnifolia*
	Highbush cranberry	*Viburnum trilobum*
	Albol currant	*Ribes 'Albol'*
	Red elder	*Sambucus racemosa*

MATURE HEIGHT AND LIFESPAN

The growth rate of woody plants and their ability to survive is entirely dependent on the quality of the growing site and the care the plants receive. The characteristics of the individual plant also play an important role in the growth performance.

Newly planted shelterbelt trees and shrubs perform best when planted in a well cultivated strip of soil, free from perennial weed growth. Under such conditions the newly planted tree will quickly reestablish its root system. Absence of competing vegetation during the first few years will greatly benefit the tree or shrub. The growth rates listed in the table should be considered average. However, when plants have to compete with immediately surrounding weeds or a grass cover, the plants become stunted and might die.

Trees with an average lifespan of 50 years or more can be classified as 'long lived', while trees which usually die at an earlier age are classified as 'short lived'. Other factors such as **diseases** (e.g. cankers on poplars, or fireblight on hawthorn, and black knot on mayday and **insect outbreaks** (such as the poplar wood borer) will shorten the lifespan of such trees.

Hedgeplants can be rejuvenated after the shrubs have been around for about 20 years. The shrubs are cut off at ground level and will readily resprout.

GROWTH RATE AND USEFUL LIFE OF SHELTERBELT TREES

TYPE	HEIGHT AT MATURITY (In metres)	RATE OF GROWTH (cm)	USEFUL LIFE
Tall Deciduous			
Poplar – Northwest	10 – 25	Up to 100 cm for several years after establishment.	Long lived under favorable conditions.
– Brooks #6	10 – 25		
– Griffin	10 – 15		
– plains cottonwood	15 – 25		
Willow – Laurel leaf	10 – 20		Short lived
– Acute leaf	10 – 20		Short lived
– Golden	10 – 20		Short lived
– Peach leaf	10 – 20		Short lived
Manitoba Maple	15 – 20	30-60 cm/year	Medium lived
Green ash	15 – 20	30-60 cm/year	Long lived
Bur oak	15 – 20	30 cm/year	Long lived
White birch	10 – 15	50-100 cm/year	Short lived
Small Deciduous			
Mayday	12	50 cm/year for a limited number of years after planting.	Short lived
Chokecherry	8		Short lived
Russian olive	10		Short lived
Sea buckthorn	7		Short lived
Hawthorn	8		Short lived
Hedge Plants			
Caragana	5	Will reach mature height within 10 years under favorable conditions.	Can easily be rejuvenated through pruning.
Lilac – villosa	4		
– common	4		
Honeysuckle	4		
Dogwood	3		
Rose – hedge	2		
– altaica	2		
Silver buffaloberry	3		
Cherry prinsepia	3		
Coniferous Trees			
Spruce – Colorado	20	40 cm/year	Long lived
– white	25	40 cm/year	Long lived
– Norway	25	40 cm/year	Long lived
Pine – lodgepole	20	40 cm/year	Long lived
– Scots	20	40 cm/year	Long lived
Larch	20	40 cm/year	Long lived

AGE AND SIZE OF SHELTERBELT TRANSPLANTS AS PRODUCED AT THE ALBERTA TREE NURSERY & HORTICULTURE CENTRE

The age of nursery stock is expressed in figures or letters relating to the number of years the plants grew in specific propagating fields. The first figure used relates to seedbeds, the second figure relates to transplant beds and the letter "C" stands for container.

Plant age of 2 – 0 means a 2 year old plant, grown for 2 years only in seedbeds.

Plant age of 1c-3 means a 4 year old plant grown for 1 year in a container and for 3 years in a transplant bed.

Container grown stock usually has been grown for some period of time under greenhouse conditions. The following table lists the average time it takes to grow a shelterbelt plant of shipping size.

SPECIES	AGE OF PLANT MATERIAL	HEIGHT (cm)
Poplar and willow	1 yr old rooted cutting	50 – 100
Manitoba maple	2 – 0	50 – 75
Green ash	2 – 0	40 – 60
Bur oak	2 – 0	30
White birch	2 – 0	50 – 75
Mayday & chokecherry	2 – 0	40 – 60
Hawthorn	2 – 0	40 – 60
Caragana	2 – 0	60
Lilac	2 – 0	30
Dogwood	2 – 0	60
Honeysuckle	2 – 0	60
Rose	2 – 0	60
Silver buffaloberry	2 – 0	30
Spruce	1c – 3	40
Pine	1c – 2	40+
Larch	2 – 0	45

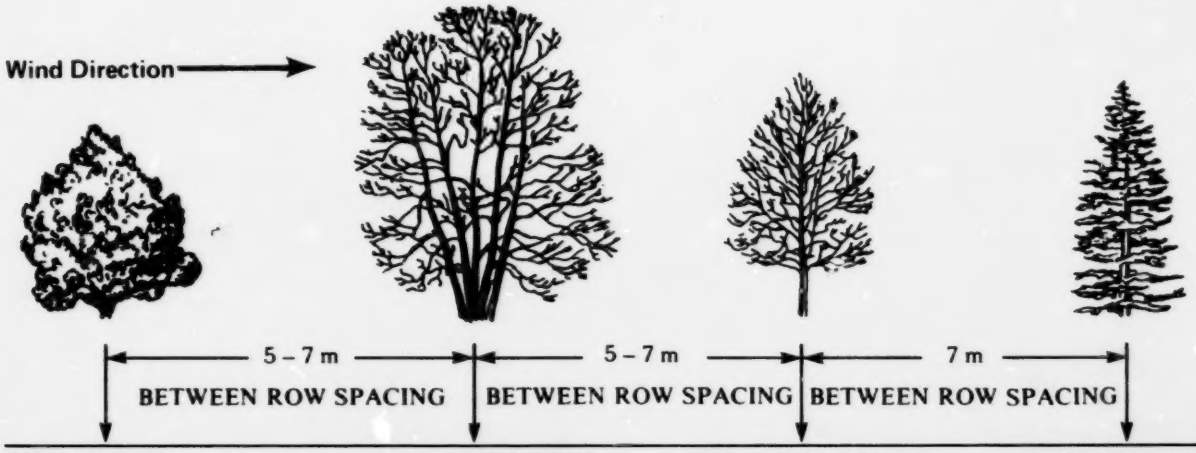
The above listed plant sizes refer to unpruned plants. It is standard practice at the Alberta Tree Nursery and Horticulture Centre to trim deciduous shelterbelt stock back to 45 cm of topgrowth.

SPACING RECOMMENDATION AT PLANTING TIME

In the previous two chapters the size of shelterbelt planting stock and the mature height of these trees have been dealt with. Farmers involved in establishing a shelterbelt tend to forget what size (height and spread) the mature trees will attain. They look at the small unimpressive seedlings and then plant them too close together. Plantings which are overcrowded cannot keep up a vigorous growth rate and the plantations become stunted. The proper approach is to follow a predetermined planting layout which takes into account the characteristics of the species. The following example of a 4-row farmstead windbreak with recommended spacings in the row and between rows is shown in Figure 1.

Multiple row shelterbelts (up to four rows) are recommended for farmstead protection. Such a multiple row belt should include a row of evergreens. Field and roadside shelterbelts should be planted in a single row for ease of maintenance. Plants in a single row planting can be slightly closer together since there is no competition on either side of such a windbreak.

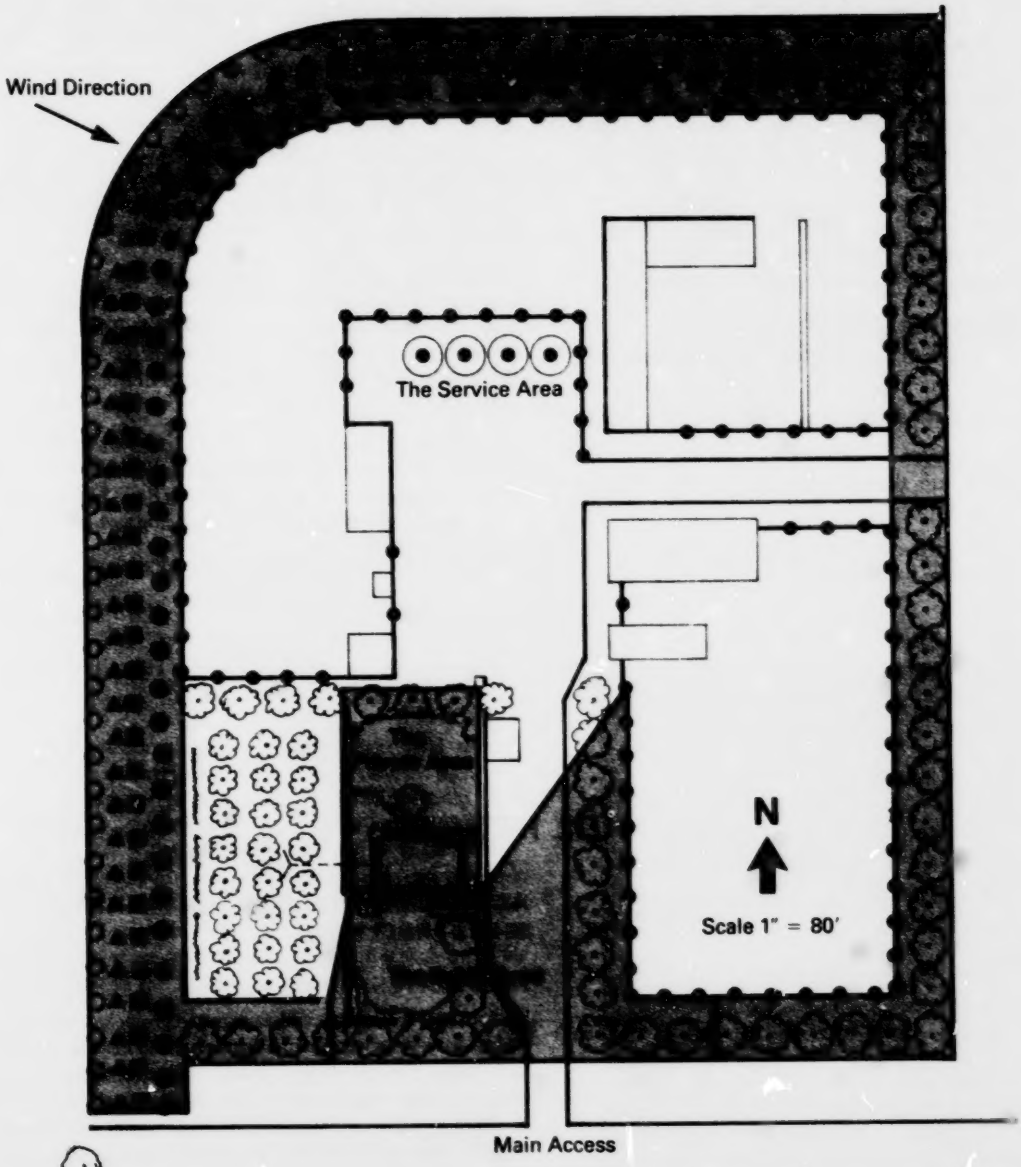
When determining the required spacings for single or double row belts, use the narrow spacings listed; and for multiple row belts, (3 rows or more) use the widest listed spacing. DO NOT mix different species in the same row. The faster and more competitive species tend to crowd out less competitive species. Therefore, plant different rows of species if such variety is desired.



TALL HEDGE	TALL DECIDUOUS (fast growing)	SMALL DECIDUOUS (slower growing)	CONIFEROUS PLANTS (slower growing)
Caragana 45 cm in the row OR Mayday 150 cm in the row OR Honeysuckle 100-150 cm in the row OR Lilac 100-150 cm in the row.	Northwest poplar 4-5 m in the row OR Brooks poplar 3-4 m in the row OR Willow 2 m in the row	Manitoba maple 4 m in the row OR Green ash 4 m in the row OR Willow 2 m in the row or Scots pine	White spruce or Colorado spruce 4-5 m in the row OR Siberian larch 3-4 m in row OR Lodgepole pine 3-4 m in row.

FIGURE 1. A recommended layout for a 4-row farmstead windbreak

Figure 2. *Shows the components of the farmstead area.*



The above sketch exhibits a basic layout for a farmstead.
The enclosed area is 8 acres (2.5 ha); prevailing wind is from the northwest.
The farmstead is composed of the residence, fruit and vegetable garden, the farm buildings, area for livestock and working space.

FIELD SHELTERBELTS

The establishment of a field shelterbelt requires a considerable amount of field preparation; valuable farmland has to be withdrawn from production of crops and the immediate strip of land alongside the shelterbelt loses its productivity. These so called 'sapped' strips, serve to provide the trees with nutrients and moisture. The width of a 'sapped' strip depends on the extent of the root system the shelterbelt will develop. Fast and tall growing species such as poplar will develop roots one to two times the height of the tree. Roots of coniferous trees do not extend more than one half the height of the tree. Hedges of caragana and lilac have sap strips equal in width to the height of the shrubs. The field windbreak also hinders the farmer in using his machinery. These disadvantages should be weighed against the benefits. A field shelterbelt is a significant investment, the advantages can be summarized as follows.

1. Reduces possible damage from wind erosion.
2. Protects crops from winds and direct damage from high wind velocity.
3. Windbreaks act as snow catchers and improve spring moisture conditions.

The area which benefits from the shelterbelt lies mainly on the leeward side of the belt.

As mentioned previously, a generally accepted rule is that the protected area leeward from a windbreak is 20 times the average height of the barrier.

A field shelterbelt has to be **continuous.** Damage from adverse weather conditions is accelerated in areas lying behind gaps in a windbreak. Therefore, the replacement of failures at an early age is a must.

The **recommended** trees for field shelterbelt plantings are the poplars, willows, caragana, lilacs, spruce and pine.

Where poplars are being used for field shelterbelts, the recommended distance between windbreaks is around 350 m. It is recommended that a single row of trees be planted at 3 – 4 metre spacing. This type of spacing will prevent the trees from early crowding and result in a vigorous growth rate.

A hedge of willow, caragana, or lilac can be planted with the poplar. The willows are recommended for good sites; caragana for dry sites. The hedge should be planted on the exposed side, 8 m away from the poplar.

Tall growing hedge plants, such as lilac, caragana, and the willow, can also be used as field shelter plants without the rows of poplar trees. However, these hedges are lower and the width of the protected strip is consequently much smaller. A field shelterbelt of this type should be planted at intervals of not more than 150 metres.

All shelterbelts (field) should be laid out in such a manner that livestock will not be able to seek shelter under or between the trees. Where livestock occupy, or at a future date may occupy adjacent land parcels, the **fencing of a field shelterbelt is a must.**

The recommended spacings of tall hedge plant material in the row is:

Willow	120 – 150 cm
Caragana	30 – 60 cm
Lilac	100 – 120 cm

ROADSIDE HEDGES

Roadside shelterbelts should be planted at least 35 m from the edge of the right-of-way. Check your district bylaws regarding this regulation. Recommended varieties are as follows:

On good soil (central and northern regions):
Willows: Laurel leaf, acute leaf planted as a single row at 1.5 – 2 m spacing.
Mayday: Planted at 2 m spacing.
Honeysuckle: Planted at 1.5 m spacing.

On sandier soils (which are less favorable):
Lilac: villosa, and common planted at 1 – 1.5 m spacing.

On dry soils (or soils which have prolonged periods of drought):
Caragana: Planted at 30 cm spacing.

On alkali soils with a pH greater than 8.5:
Russian olive: Planted at 1.5 – 2 m spacing.
Silver buffaloberry: Planted at 1.5 m spacing.
Villosa lilac: Planted a 1.5 m spacing.

ADDITIONAL REASONS FOR PLANTING SHELTERBELTS:

AESTHETICS:

Shelterbelts are established to provide protection from prevailing winds. In very general terms the prevailing airflow in Alberta comes from the northwest and windbreaks therefore are located along the north and west boundaries of sites to be protected. Windbreaks also contribute to the attractiveness of the landscape, particularly on sites and in regions where tree growth is sparse or absent.

WILDLIFE PROMOTION:

Established shelterbelts provide a habitat for wildlife by providing both cover and food supply especially for birds.

Fruit from the Russian olive is particularly useful in attracting birdlife. However the seeds of lilac, Manitoba maple and green ash are also eaten by birds. The fruits of the mayday and chokecherry provide seasonal food for songbirds. Shelter from tall mature evergreens of spruce and pine is especially desirable. Such windbreaks help pheasants to survive the winter.

DESCRIPTION OF SPECIES

POPLARS

Description:

These are probably the best-known trees on the Canadian prairies, in part because poplars are found over much of the area.

Poplars develop a wide spreading, shallow root system, consequently, the strips immediately adjacent to a poplar windbreak do not produce crops. Poplar trees are either male or female, the female trees produce the fluffy seeds. Most poplar trees can easily be propagated from cuttings. The nurseryman prefers to select the male poplar tree for multiplication, and the female 'clones' from Russian poplar for example are no longer used for shelterbelt plantings.

Shelterbelt Value:

Poplars are highly recommended for use in a multiple row farmstead shelterbelt. Their quick growth means early protection of the site. Since poplars develop into tall, usually wide-spreading structures, these trees should be spaced at least 4 m apart in the row and not closer than 7 m between rows.

Topping or 'pollarding' of poplars:

Removal of the tops of fast growing trees such as poplars is not recommended. This practice leaves the trees deformed for the rest of their lifespan. Topping also shortens the life of the tree because the large wounds open the trunk, allowing the entrance of decay organisms.

TREMBLING ASPEN

Description:

This tree species is still commonly found in the agricultural zone of central and northern Alberta. The greenish to white bark is quite distinctive. In the southeast part of the province the tree only occurs in the lower moisture retaining depressions of the terrain. Here, the tree only develops into a shrub-like structure. But in the western and northerly regions of Alberta, the trembling aspen can grow into a tree over 30 m high. The smooth white bark is quite sensitive to injury and basal bark wounds are readily infected with decay fungi. The dark green circular leaves readily move with the slightest of air currents and because of this feature the tree is known as 'trembling' aspen.

Shelterbelt Value:

In Alberta natural windbreaks of trembling aspen contribute greatly to the protection of farmsteads, crops and livestock. Much more attention should be given to the preservation of this native tree cover, otherwise our agricultural lands will lose the benefit of native shelter. Where land clearing is in progress for the purpose of converting bushland to agriculture, the tree cover should be reserved on the windward side of the future farmstead. Leaving strips of trees parallel to roads and property lines to provide field windbreaks is highly desirable. Such strips should be not less than 10 m wide.

Management and Care:

Since livestock use the trembling aspen treecover for protection (from wind, sun and insects), and since this treecover suffers from much trampling and rubbing, farmers should fence the area to keep out all forms of livestock, if they value the treeshelter as a permanent feature. Groundfires should be avoided. Underplanting pure aspen stands with native white spruce will upgrade the quality of native shelterbelts.

Trembling aspen

BALSAM POPLAR:

Description:

This tree is another native poplar but much less commonly found than the trembling aspen. It is found growing in moist well drained sites such as along riverbanks. The bark on older trees is grayish black, rough and furrowed. The tree is less susceptible to decay fungi, so it can live for many years and develop an impressive trunk diameter.

Shelterbelt Value and Management:

In the past this tree has occasionally been planted in farmstead shelterbelts or as an ornamental. On moist fertile soils the tree can be used as such, but the female specimen will eventually produce cotton fluff in abundance. The main value of this tree is in its presence in farm woodlots and in native field shelterbelts. The balsam poplar requires the same protection as the trembling aspen if its existence is to continue in the farming area of west central Alberta.

PLAINS COTTONWOOD

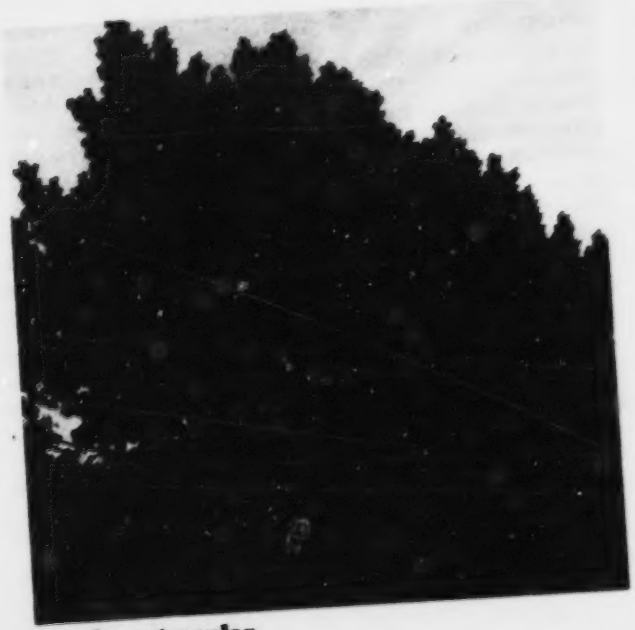
Description: — This is the native poplar of the river flats of southeastern Alberta, a large, vigorous tree, it is hardy throughout the province. The triangular leaf with the sharp point is easily recognized. Older bark is rough and furrowed.

Shelterbelt Value and Management: In southern Alberta, particularly around the irrigated areas, this tree was commonly planted as a windbreak. In the 1940s and 1950s this clone was discontinued because of lack of plant material. A male clone is presently available again and use of the tree is recommended. It seems to be more resistant to canker dieback than some of the hybrid poplars. Wider spacing in the row (4 – 5 m) is recommended since this tree has a wide spreading growth habit. Only the male selections should be used since female cottonwoods produce a lot of fluff. Older shelterbelts will benefit from proper pruning or by a release cutting whereby competing vegetation such as caragana is suppressed. Release cutting is the removal of dominant trees to allow the remainder of the stand to thrive.

NORTHWEST POPLAR

Description: — This poplar is considered a natural hybrid between the plains cottonwood and balsam poplar, therefore features of both parents can be recognized in the tree. The tree was introduced by the Northwest Nursery, Valley City, North Dakota as a male clone. It is a fast and tall growing tree which develops a wide-spreading crown. The bark on mature trees stays smooth.

Shelterbelt Value and Management: — This is one of the fastest growing deciduous trees available for shelterbelt establishment. Mature trees growing on good soils reach a height of 25 m or more. Under less favorable growing conditions or under poor management (damage from livestock), Northwest poplar may be invaded with cankerous growth and suffer from dieback. Spacing recommendations are similar to those listed for plains cottonwood. For farmstead windbreaks, poplars should be planted in combination with an evergreen. Leave 7 – 8 m between the rows.



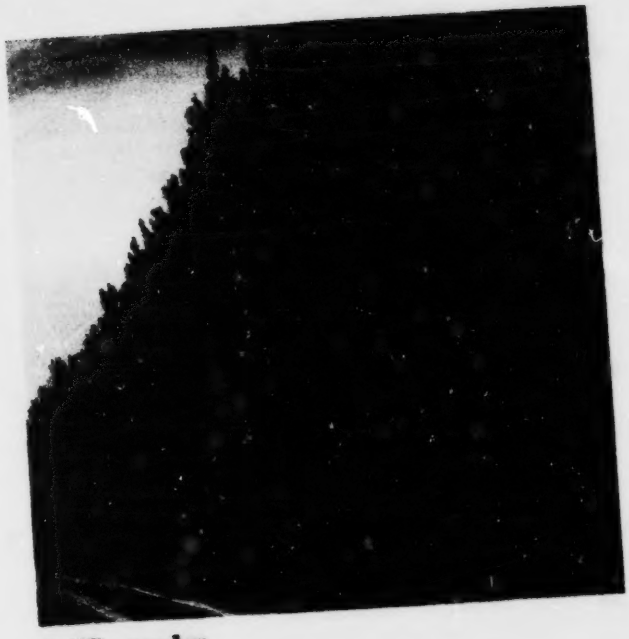
Northwest poplar

GRIFFIN POPLAR

Description: — This poplar hybrid originated from a cross between the female plains cottonwood and a male Russian poplar made by Mr. Griffin, superintendent of the Horticulture Station at Brooks in 1918. Several selections, identified by number, were made. The Brooks #1 selection is now called the 'Griffin poplar'. The sharply uprising branches on the central stem is the main characteristic of this tree. The tree has a rather narrow crown. It is considerably shorter than the previously mentioned poplars, Northwest poplar and plains cottonwood.

Shelterbelt Value and Management: — The Griffin poplar is more sensitive to adverse growing conditions than the Northwest or Brooks #6 poplar. While being established competing weeds should be kept under control. The tree is quite suitable for use in confined settings where space does not permit the planting of the taller and more widely spreading poplars.

Recommended spacing in the row is 2.5 m. Plant this poplar at least 5 m from adjacent rows of evergreens. Avoid pruning of the bottom branches.

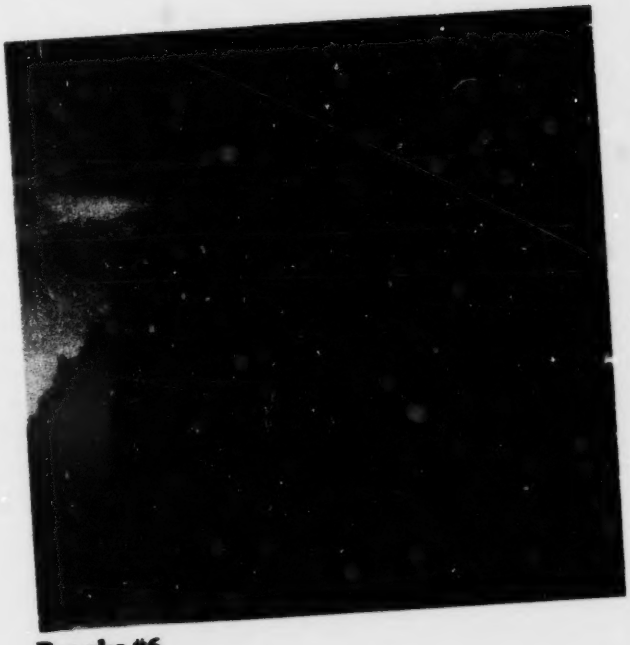


Griffin poplar

BROOKS #6 POPLAR

Description: — A tall, fast growing tree (more than 25 m) with a distinct clean bole and diamond shaped leaves. This is another male clone selected from the breeding work of Mr. Griffin at the Brooks Horticulture Station.

Shelterbelt Value and Management: — Recommendations made for the Northwest poplar regarding shelterbelt use apply to the Brooks #6 poplar. Shallow cultivation along the shelterbelt will greatly improve the growth rate and lifespan of this tree.



Brooks #6

WILLOWS

The willows used in the shelterbelt program develop into multiple stemmed structures. These trees are moisture loving and should be planted on moist but not on poorly drained soils. Like poplars, willow trees are either male or female. No male clone selections are, as yet, available for shelterbelt planting. As a willow tree is inclined to develop a multiple stem, pruning at an early age is recommended if a single stemmed tree is desired.

ACUTE LEAF WILLOW
(See Sharp Leaf Willow)

Description: The acute leaf willow is a fast growing tree with a large number of wide spreading stems. The long narrow leaves are quite distinctive. The leaves of this willow are often infested with reddish galls in which a larva of a gall wasp develops. Older stems develop a deep furrowed bark.

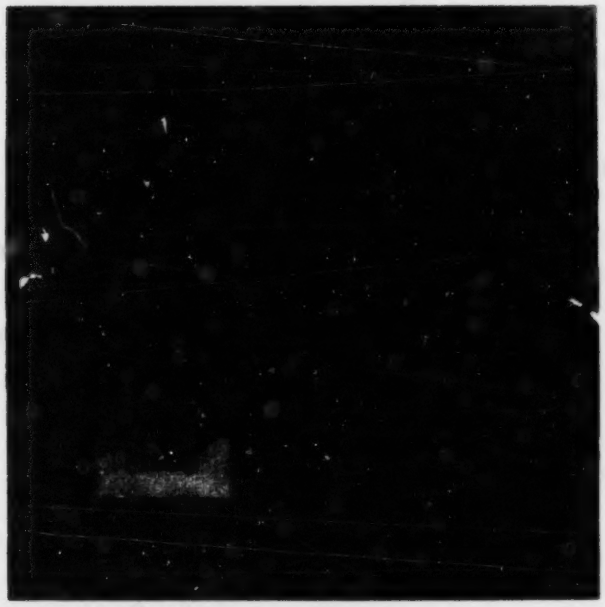
Shelterbelt Value and Management: — Next to poplars, this willow is one of the quickest growing deciduous trees for use in a shelterbelt. A single row, planted at 2 m in-row spacing will develop into a wide belt up to 10 m across. The tree grows up to 12 m high. Ideally, this willow should be planted in combination with the taller growing and longer lasting spruce. Plant the spruce 6 to 7 m away from the row of willows. Maintain shallow cultivation for weed control along the fringe areas.

Acute leaf willow

LAUREL LEAF WILLOW

Description: This tree was introduced from Europe. It is similar in development to the acute leaf willow, although its ultimate height will be slightly greater (up to 15 m). The shiny dark green leaves make this tree outstanding. The foliage is retained late into the fall after most other deciduous trees have shed their leaves.

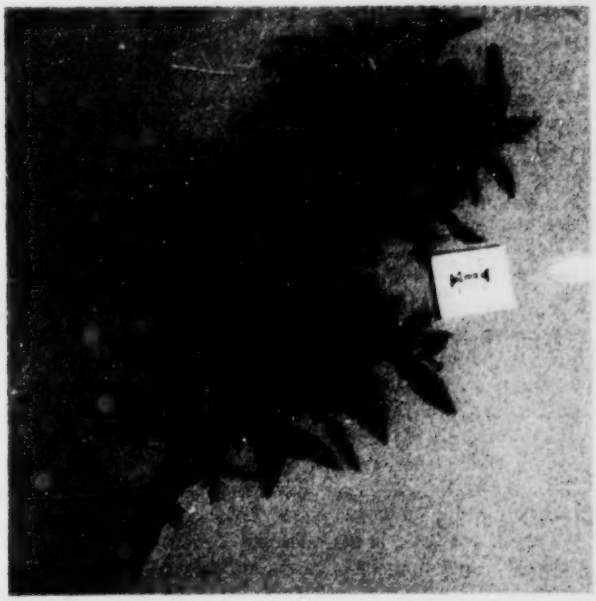
Shelterbelt Value and Management: — This species should be used in the same manner as the acute leaf willow. The laurel leaf willow appears to be more susceptible to dieback and should not be used on dry sites and poor soils. Willows will not survive on alkaline soils.



Laurel leaf willow

GOLDEN WILLOW

Description: The growth habit and leaves resemble those of the acute leaf willow. The golden willow is easily recognized during the winter months when the younger twigs display an attractive 'golden' color, making a contrast with otherwise colorless surroundings. This tree should only be planted on better well-drained agricultural soils, and is not recommended for gray wooded soils.



Golden willow

PEACH LEAF WILLOW

Description: This willow is native to Manitoba, where it grows along riverbanks. The leaves are long and narrow.

Shelterbelt Value and Management: Similar to the other listed varieties.

Peach leaf willow

MANITOBA MAPLE

Description: The Manitoba maple has inconspicuous flowers without petals that appear before the leaves emerge. Male and female flowers are separate, and occur on separate trees. The fruit develops into pairs of winged seeds. The leaves are compound, usually divided into 3 to 5 pairs of leaflets with one single end leaflet. The tree often develops several crooked and leaning stems. However, the tree can be trained into a single straight stem. Its natural area of distribution extends as far west as southern Saskatchewan, where it is found along water courses.

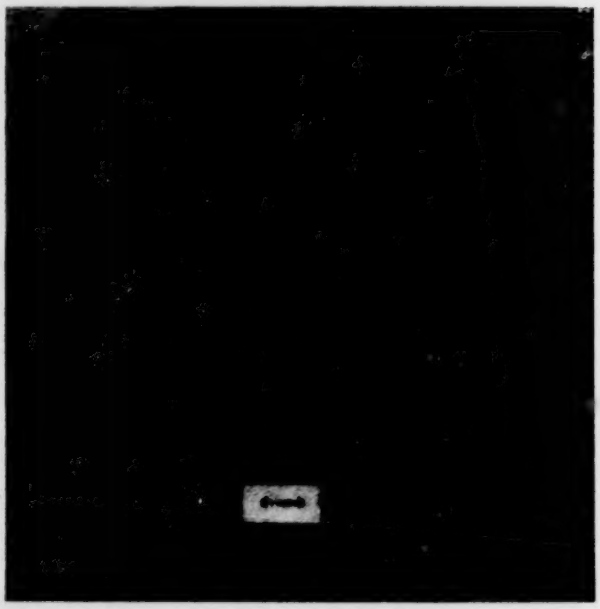
Shelterbelt Value and Management: This tree readily adapts to a wide range of soil and climatic conditions. It will survive under the most adverse conditions of drought and neglect. Some disadvantages of the tree are the irregular stem development, the fact that aphids are attracted to the foliage and the high degree of sensitivity of the foliage to the 2,4-D herbicide. The aphids, if present in very large numbers, will cause honeydew to develop. This is a sticky, sweet excretion which will cover anything placed under the trees. The Manitoba maple therefore, should not be used as a shade tree close to the residence. Rabbits do not seem to like the bark of the Manitoba maple when they are forced to live on treebark. Manitoba maple should be planted 2.5 m apart in the row. Adjacent rows should be spaced a minimum distance of 6 m away from the maple. It is important to train maples by pruning out very crooked and low spreading stems and branches. Older shelterbelts often contain dead wood which should be pruned out.

Manitoba maple

GREEN ASH

Description: This tree is native to southern Saskatchewan and Manitoba. It is hardy and very drought resistant and in Alberta will reach a height of 15 m. The flowers appear before the leaves, and like the maple, male and female flowers occur on separate trees. The leaves are compound with 3 to 7 pairs of leaflets and a single top leaflet. The tree is late in leafing out and will drop its foliage early in the fall. This ash is easily trained into a single-stemmed trunk. It is the best boulevard tree for Alberta conditions, (selected male specimens are preferred for use as boulevard trees, e.g., the 'Patmore' green ash).

Shelterbelt Value and Management: The green ash adapts readily to a wide spectrum of soils, from dry sandy locations to heavy clays and leached podzols. It will of course grow more quickly on fertile and moist sites, but with proper care the tree is useful for shelterbelt planting throughout Alberta. The tree benefits greatly from shallow cultivation which results in proper weed control. Small seedling trees planted in grass sod usually perish. Space the trees in a single row at 2 – 2.5 m apart. Use green ash in multiple row shelterbelts in combination with a row of coniferous trees or willow or poplar. Adjacent rows should be 6 m apart. In older windbreak plantings green ash was often mixed with Manitoba maples, poplars, and elms. In such plantings, the green ash was often suppressed by the faster growing species of maple and poplar. Release cutting can be beneficial in such cases; the ash should be favored by removing the competing species.

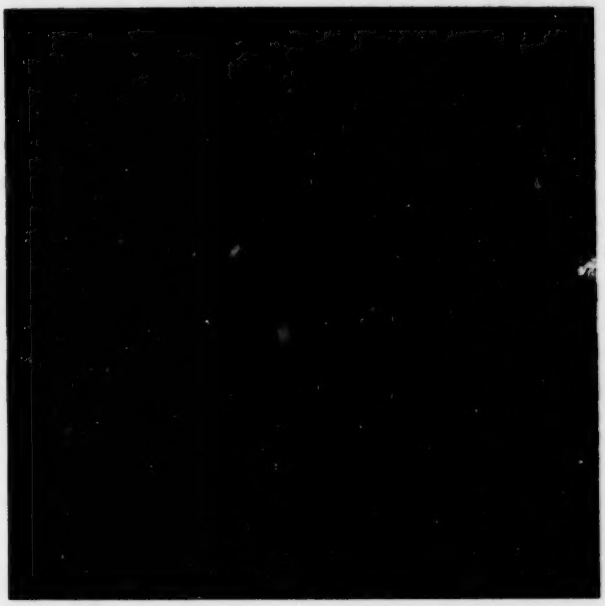


Green ash

BUR OAK

Description: This tree grows up to 10 m in height under Alberta growing conditions. The tree is native to southern Manitoba where it is found on the flood plains of rivers. The leaves are roundly lobed and have fine white hairs underneath. The fruit, a small acorn is probably the most readily recognized feature. The acorns are deeply set in a cup covered with knobby scales. The tree bark is deeply furrowed, and small branches have corky ridges.

Shelterbelt Value and Management: This is a hardy, drought resistant and long-lived tree, which deserves a place in shelterbelt plantations. The tree grows slowly and is rather difficult to transplant, because of its characteristic taproot. Plant the tree at 2.5 m spacing in the row. Since growth is slow this tree should be used in combination with a row of willows or poplars, 7 to 8 m away from the oak. Do not use oak for field shelterbelt planting.

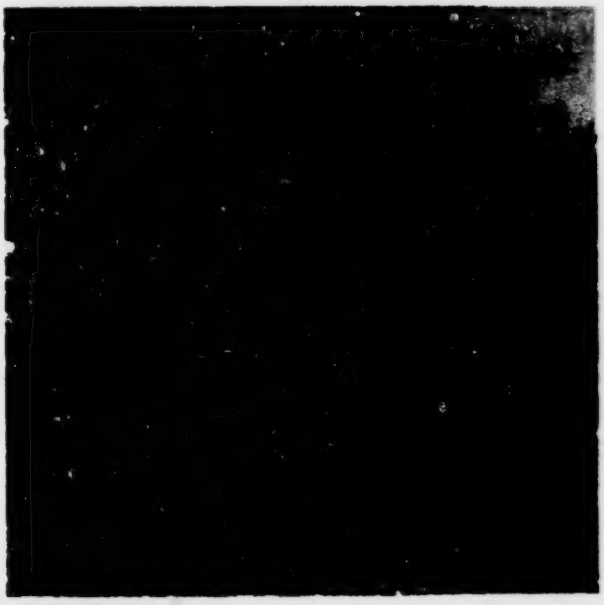


Bur oak

WHITE BIRCH

Description: The tree is most easy to recognize by its white smooth bark. The white birch has flowers arranged in catkins.

Shelterbelt Value and Management: White birch is not a very good tree for shelterbelt plantings, although it serves a useful purpose as an ornamental for farmsteads. The tree cannot grow in competition for light with other species. Under good conditions birch grows quickly during the first few years, but has a short lifespan. It is adapted to moist soil conditions.

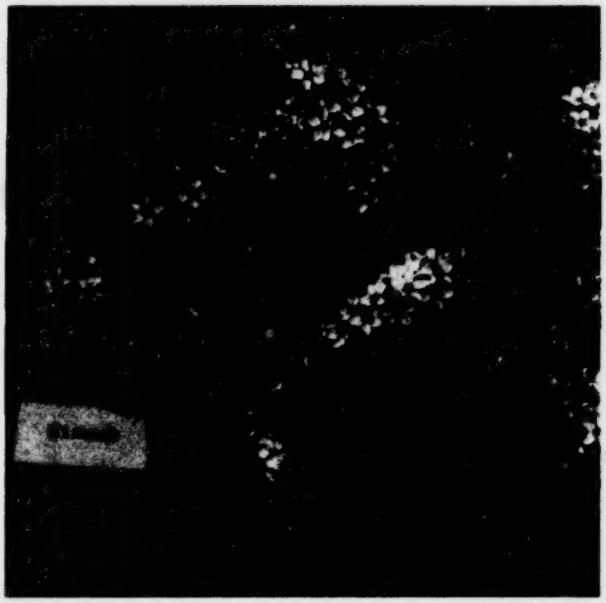


White birch

MAYDAY

Description: Although not a native to Canada, this small deciduous tree has proven its value in shelterbelts. From the middle till the end of May the white flower display is spectacular. The oval leaves taper at the top into a fine point. The mayday does not, under shelterbelt growing conditions, develop a single stem, instead it develops into a tall shrub with several uprising stems.

Shelterbelt Value and Management: This tree is useful as a tall hedge if grown in combination with rows of taller growing shelterbelt plantings. Plant the mayday at 2.5 m spacing, 6 to 7 m away from other rows. The flowering of mayday in the spring makes it 'a thing of beauty and a joy forever'. Some pruning is recommended to remove bottom branches. Older trees are often attacked by a fungus growth on the branches, the so called 'black knot' disease. This pest can be controlled by pruning. The black berries of the mayday are readily eaten by birds. The tree can also be pruned to a single stem and, in that shape, is useful for boulevard planting.

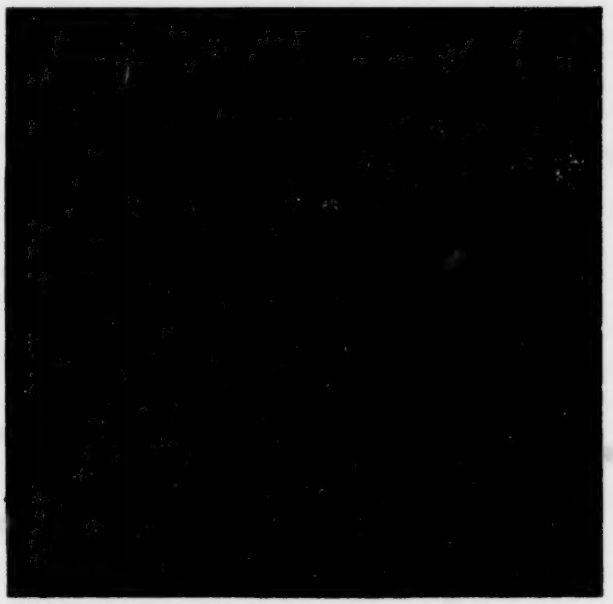


Mayday

CHOKECHERRY

Description: This well-known native cherry tree grows in Canada from coast to coast, as well as in the southern regions of the Northwest Territories, and the Yukon. The plant develops into a tall shrub or multiple-stemmed tree up to 7 m in height. The flowers appear in long clusters by the end of May. The fruit is usually a round purplish black cherry with a big round stone, but there is also a yellow fruiting variety. The fruit has an astringent flavor (which accounts for the name 'choke' cherry). A horticultural selection, the 'Shubert' chokecherry has foliage which turns purplish later in the summer.

Shelterbelt Value and Management: The chokecherry is very drought resistant and suitable for planting anywhere in Alberta. A medium sized hedge, either as a field windbreak or as a roadside shelterbelt may consist of a single row of chokecherry planted at 1.5 m spacing. The foliage of chokecherry is poisonous to cattle if consumed in large quantities. Birds will feed readily on the fruit. Black knot disease can be very destructive to this plant. Prune out any signs of the fungus!

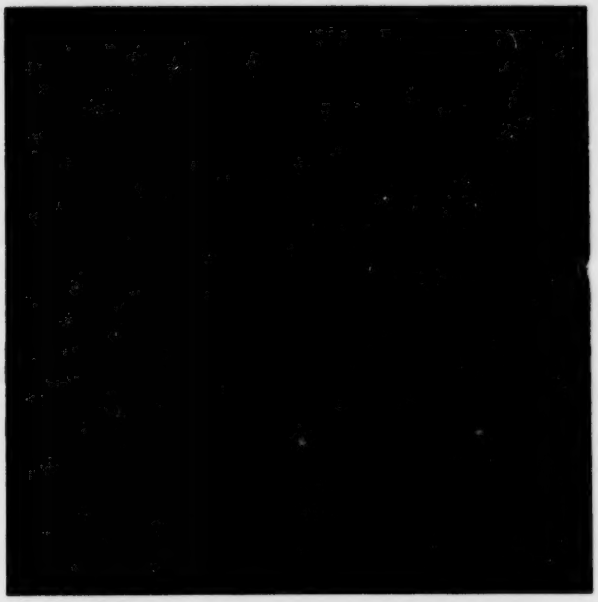


Chokecherry

RUSSIAN OLIVE

Description: This is an introduced species from southeastern Europe. The narrow leaves with the silvery color are quite distinctive. The plant grows into a tall shrub and seldom reaches heights over 8 m. It often develops thorns 2 cm long along the branches. New shoots that develop late in the summer are sometimes winterkilled and this will show up the following year. This suggests that Russian olive is not fully adapted to Alberta's climate. The dead foliage will often be retained well into the winter.

Shelterbelt Value and Management: This species is mainly recommended for plantings in the southeastern part of the province. In the northwest quarter of the province the shrub often winterkills. The tree is adapted to periodic drought and will survive on alkaline soils. The fruit is highly favored by birds. Russian olive should be planted along with tall growing trees, as a second row. Plant 2.5 m apart in the row with 7 m between rows. Older shrubs can readily be rejuvenated by cutting the topgrowth away. The new sprouting will quickly reestablish a new hedge.

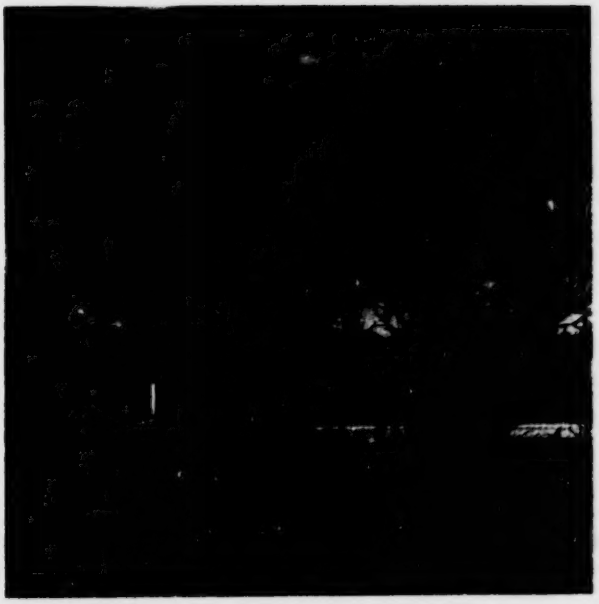


Russian olive

SEA BUCKTHORN

Description: The sea buckthorn is a tall growing shrub of 2.5 m, irregular in shape, with spiny branches and narrow shaped leaves of silvery green with undersides covered with brown dots. Male and female flowers occur on different plants. The flower itself is inconspicuous but the fruits are very showy orange berries.

Shelterbelt Value and Management: This plant has more value as a hardy ornamental (because of the fruit) than as a shelterbelt shrub. It can be used for planting on sites with a high salt content, since the plant tolerates such soils.



Sea buckthorn

HAWTHORN

Description: The name 'Hawthorn' is a catchword for different species of the genus 'Hawthorn'. The Chocolate Hawthorn is usually grown at the Alberta Tree Nursery.

The chocolate hawthorn develops into a small tree or tall shrub up to 5 m in height. Leaves are pale green, often shallow lobed. White flowers are born at the ends of branches, in clusters. The red to dark red berry-like fruit is called a 'haw'. The branches have spines 3 cm long.

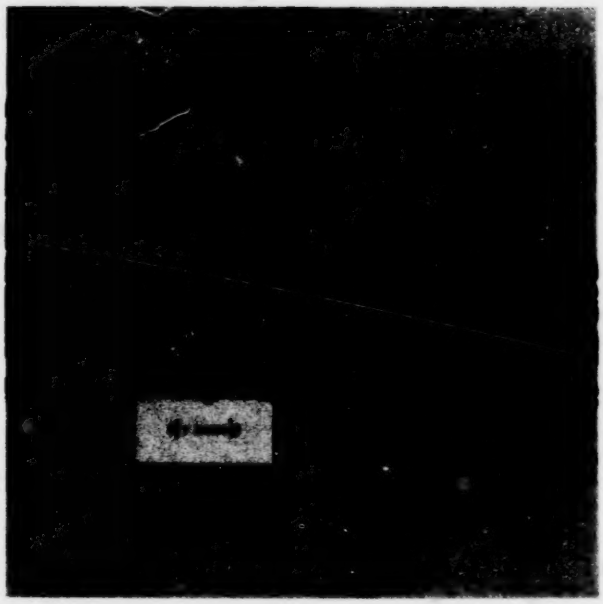
Shelterbelt Value and Management: The hawthorn has an ornamental value because of its flowers and fruit. The plant is sufficiently hardy for use anywhere in Alberta, however, it is a rather slow starter. It is best used as a second row alongside a row of tall growing trees. It is recommended for use in farmstead plantings because of its ornamental qualities, but as a field windbreak the plant has not much potential. Plant at 2 m spacing in the row. Hawthorn is susceptible to fireblight, and landowners should watch out for any signs of this disease. The fruit of hawthorn is favored by birds.

Hawthorn

CARAGANA

Description: This is a hardy drought tolerant shrub with an upright growth habit. The plant is native to Siberia, but has been planted extensively throughout the Canadian prairie. The leaves are light green in the spring, compound, and followed by a pod-like fruit with many seeds. When the pods mature, they spring open and shoot the seeds away. In this manner caragana easily seeds itself, particularly in cultivated grounds. It does not perform well in wet soil conditions.

Shelterbelt Value and Management: Through the distribution of shelterbelt planting stock, caragana has become well known. Most prairie farmers are familiar with this shrub and its growth habits. Caragana is able to thrive on a wide variety of soils and under extremely tough growing conditions. Its ability to survive on dry soils and its excellent winter hardiness make it most useful for hedge type plantings throughout Alberta. Caragana will not survive on sites where repeated flooding occurs. The shrub grows to mature heights of 4 m. Caragana should be planted in single row field windbreaks, with a planting distance of 30-60 cm in the row. In multiple row shelterbelts it is a recommended hedgerow for the windward side of the belt.



Caragana

LILACS

Two lilacs are commonly used for shelterbelt plantings: common lilac and late lilac.

COMMON LILAC

Description: The lilac is a wide spreading shrub, up to 4 m in height. Leaves are in pairs, heart shaped at the base, smooth on the surface, with a smooth margin. The flowers are usually purple, fragrant, appear in clusters, and develop from the terminal buds. The mature plant tends to develop numerous sucker sprouts. The shrub originates in southeastern Europe but is fully hardy throughout Alberta.

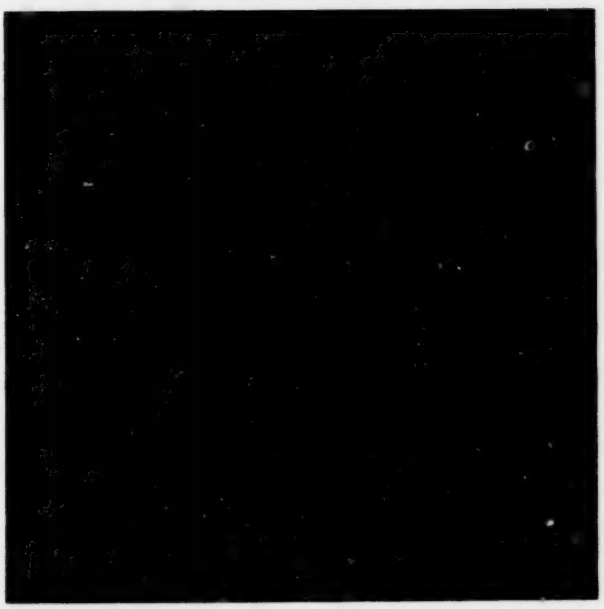
Shelterbelt Value and Management: Common lilac is recommended as a single row hedge in farmstead shelterbelts, field windbreak hedges or roadside plantings. In multiple-row belts the lilac is recommended as a single row planting on the windward side of the belt. Common lilac will perform satisfactorily on dry, sandy sites but is not recommended for peaty soils. The habit of developing sucker growth is beneficial in creating a dense hedge. Wildlife prefers a dense cover. The showy purple or pink flowers are an asset, particularly when used for farmstead beautification. Removing the terminal growth takes away the flowershow. Spacing in the row should be 1 to 1.5 m.

Common lilac

VILLOSA LILAC OR LATE LILAC

Description: This is an extremely hardy shrub, native to northern China. The leaves are broad, elliptic to oblong, dull green above and bluish green underneath. The leaf surface is uneven with the veins and midriff clearly showing. Leaves are opposite. Flowers are a faded purple or pinkish, and the shrub blooms two weeks later than the common lilac. The shrub is nonsuckering, which is often considered to be an advantage when used in farmstead plantings.

Shelterbelt Value and Management: The same recommendations given for the common lilac apply to the late lilac. The fact that late lilac does not sucker is often considered to be an added advantage of this shrub. It has less value as an ornamental than the common lilac. Spacing recommendations are 1 m – 1.5 m in the row; in multiple-row plantings the lilac should be planted 5 – 6 m away from adjacent rows of trees.



Villosa lilac

TARTARIAN HONEYSUCKLE

Description: This is a fast growing shrub, 3.5 m in height at maturity. Flowers are white, pink or red. Fruit is a red berry, which is not readily eaten by birds. Leaves are opposite, with smooth edges. Young twigs are pale yellow and smooth. Older stems show frayed bark and lose the lower foliage.

Shelterbelt Value and Management: The tartarian honeysuckle originates in Siberia. This shrub is hardy and drought resistant. It is recommended as a hedge for farmstead shelterbelts. The flowers, which occur at the beginning of June, are ornamental. It is also recommended that one plant honeysuckle with other rows of shelterbelt trees. Planting distances within the row are recommended at 1 m to 2 m. The shrub is also useful for beautification purposes, i.e. for foundation plantings or as accent plants.

Tartarian honeysuckle

DOGWOOD

Description: This is a native shrub commonly found in mixed wood forests and along streambanks. Mature height is 1 m to 1.5 m. Leaves and twigs are opposite one another on the branch. White flowers occur in clusters. The fruit is a white berry. Young twigs turn red in the fall. These red branches are very typical of the shrub and provide ornamental value. The shrub is shade tolerant.

Shelterbelt Value and Management: The shrub develops quickly as a seedling. After pruning new shoots develop readily. This makes the shrub useful as a sheared hedge. Since the height is so limited the shelterbelt value of dogwood hedges is limited. Nevertheless, its main value consists of its use for hedging material.

Dogwood

HEDGEROSE

Description: The mature height of this shrub is around 1 m. The shrub is very similar although not identical to the wild rose in Alberta. Stems are red with thorns. Leaves are compound with 3 pairs of leaflets. Flowers are single, reddish or pink. Fruit a red rosehip, which is readily eaten by birds. The shrub used in the shelterbelt program is a selection of the native wild rose.

Shelterbelt Value and Management: The limited height makes the shelterbelt value of this shrub insignificant. As an ornamental hedge the plant is useful for farmstead beautification. Recommended planting distance in the row is 1 m between plants. Older hedges can readily be rejuvenated by cutting the plants down to ground level. The plant suckers freely, which might be considered a nuisance.

Hedgerose

ALTAI ROSE

Description: This rose has reddish brown branches with long and numerous thorns. The flowers are larger than the previous variety, creamy white and appearing in large numbers.

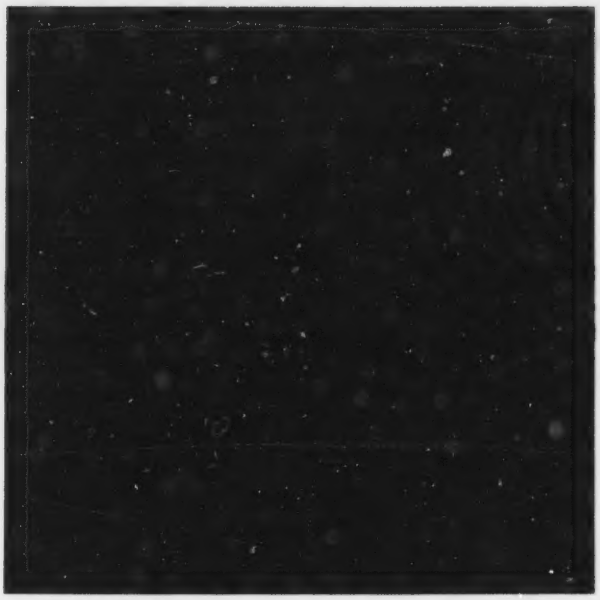
Shelterbelt Value and Management: The shrub has the same growth habit as the hedge rose, but is of greater ornamental value because of the larger flowers.

Altai rose

SILVER BUFFALOBERRY

Description: This is a native shrub which grows in the treeless prairie. Leaves are opposite, small, silvery in color. The branches carry spines, flowers are inconspicuous, brownish, with male and female flowers on different plants. Fruit is a reddish berry. Mature height is 2 m.

Shelterbelt Value and Management: The limited height and open structure of this shrub make it of limited use as an effective wind barrier. It is hardy, very drought resistant, and is able to survive under alkali soil conditions. The fruit is readily eaten by birds. The color of the foliage gives the plant value as an ornamental. Fruit will only form if a number of plants are planted together, so that male and female plants are present. Recommended planting distance for a single row is 1.5 m.



Silver buffaloberry

CHERRY PRINSEPIA

Description: A dense growing shrub, about 1.5 m in height at maturity. The branches are spiny. Leaves are light green, narrow shaped and with a smooth margin. Flowers are small, yellow and the fruit is purplish red.

Shelterbelt Value and Management: Cherry prinsepia is drought resistant and grows into a dense hedge. The plant is useful as a low growing roadside hedge or an an ornamental. Planting distance of 1 m is recommended. Pruning is not required but can be done.

Cherry prinsepia

WHITE SPRUCE

Description: The tall growing evergreen, up to 30 m in height, is a native of the mixed wood forests of Alberta. The tree is shaped like a narrow uprising cone. Horizontal spread can be 7 m at maturity. Young branches are pale yellow. Cones are up to 5 cm long.

Shelterbelt Value and Management: This is our most valuable evergreen tree for shelterbelt planting. Under average conditions the tree will grow about 40 cm per year, after the young plant is well established. It is most commonly used in multiple-row shelterbelts as an inside row (i.e. on the protected side of the belt). Recommended spacing of the tree in the row is 3 m. Since spruce cannot compete with the much faster growing poplars and willows, ample space should be provided between rows if it is planted next to these fast growing deciduous trees. The minimum recommended distance between rows of spruce and deciduous trees is 7 m. White spruce is also very useful as an ornmanetal either by itself or in groupings. Spruce grows best in moist fertile soils (on alluvial soils along streams and rivers). However, the tree has been planted throughout the agricultural area of Alberta where native tree growth is absent, therefore, spruce is able to survive under less favorable moisture conditions. Under dryland prairie conditions shallow cultivation around the tree is recommended.

White spruce

COLORADO SPRUCE

Description: This tree originates in the higher elevations of the Rocky Mountains of Colorado and Utah, U.S.A. The needles of this spruce are somewhat longer and stiffer than of the white spruce, and the needle points are sharp. Needle color is much bluer than the white spruce, and some specimens have outstanding blue foliage. The tree shape is pyramidal and mature height can reach 25 m. Cones are 15 cm long and cylindrical, straw colored.

Shelterbelt Value and Management: Although white spruce is of equal value as a shelterbelt tree, most people prefer the Colorado spruce. Undoubtedly the attractive color of the needles has much to do with this preference. The Colorado spruce is hardy, but might suffer from sun scalding of the foliage on younger plants during late winter. Spacing recommendations and use are similar to those for the white spruce. The ornamental value, particularly of the blue needle trees, is much greater than that of the green needle variety. In Alberta the blue Colorado spruce is one of the most frequently used ornamental evergreens around homes and buildings.

Colorado spruce

NORWAY SPRUCE

Description: This is a native tree of central and northern Europe. In growth performance it is equal to the native white spruce. Older specimens reach heights of 20 m. The needles are soft, like white spruce. Cones are cylindrical, firm, up to 13 cm in length, brown. The main branches are slightly ascending while the attached smaller branches tend to droop. This gives the tree a graceful appearance.

Shelterbelt Value and Management: On the better agricultural soils in central Alberta, Norway spruce can be used in combination with white spruce. The tree is not recommended for the dryland prairie area. Norway spruce deserves planting as an ornamental. Spacing recommendations are similar to the ones given for white spruce.

Norway spruce

LODGEPOLE PINE

Description: This pine tree is native to Alberta. Although the name 'jack pine' is commonly used, the real jack pine is a distinctly different species. Jack pine occurs in N.E. Alberta while the lodgepole pine is the dominant tree along the foothills and in the mountains. The tree is a tall narrow uprising evergreen, up to 25 m in height. The trunk is straight, needles occur in pairs. Cone scales have small prickles.

Shelterbelt Value and Management: Pine trees are more difficult to transplant than spruce. Once established, however, the lodgepole pine grows rapidly, will withstand drought and is generally free of insect and disease problems. Pines are recommended for the lighter soils but will not grow under alkaline conditions. Pine can be effectively used in single row shelterbelts, at spacings of 2.5 m. The tree is also recommended for combined plantings with a row of hedging material or in a multiple-row shelterbelt, with at least 6 m between pine and adjacent rows of trees. Lodgepole pine is also recommended as an ornamental.

Lodgepole pine

SCOTS PINE

Description: This is an introduced evergreen from Europe. The tree has the same growth potential as the lodgepole pine. A distinct difference is the reddish bark of the main stem on older trees of Scots pine. The needles grow in pairs, like those of the lodgepole pine, but needles are more bluish and slightly shorter.

Shelterbelt Value and Management: Scots pine is similar to lodgepole pine as far as its effectiveness in shelterbelts is concerned. Since Scots pine originates in northern Europe, including England, the origin of the seed is important in getting a hardy strain. In Alberta a Scots pine selection named Ladoga pine or Bugnet pine has proven to be superior in growth rate and hardiness. This strain originates in northern Russia. Shelterbelt trees are grown from seed collected from 'Lodoga pine' trees. Scots pine is also a valuable ornamental which should be planted in sunny locations.

Scots pine

SIBERIAN LARCH

Description: This tall, fast growing tree loses its needles during the winter. The needles occur either in clusters (on the older twigs) or singles on one-yearold shoots. Needles are soft, not stiff and pointed, as with the spruces and pines. Cones are small (4 cm), roundish. The tree can reach a height of 30 m.

Shelterbelt Value and Management: Although the tree is much less effective as a wind barrier because it loses its foliage during the winter, the tree is considered a good windbreak builder. Larch grows well under dryland prairie conditions. The main limitation in its use is that it is difficult to transplant and get established. Planted at 2.5 m spacings on well cultivated sites, the tree will grow up to 1 m per year. The wide spreading branches make this species very suitable for accent planting, particularly because of its foliage color in the fall.

Siberian larch

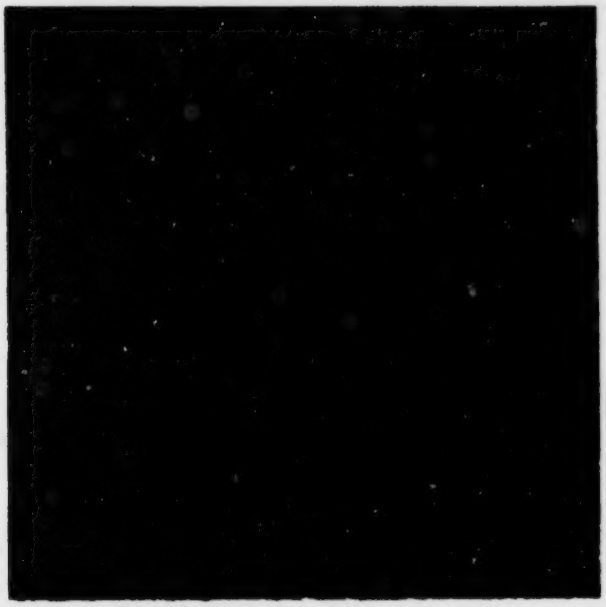
THE CONSERVATION BUNDLE

For a number of years Alberta Agriculture has made a selection of fruit-bearing shrubs available to farmers. These shrubs may be obtained through the services of the shelterbelt program. The plant material distributed has no value for shelterbelt plantings. However, the fruit of these shrubs is useful for making wine, jelly or jams. The fruit will also attract birds. These bundles differ in variety from year to year while the total number of plants ranges between 25 and 40.

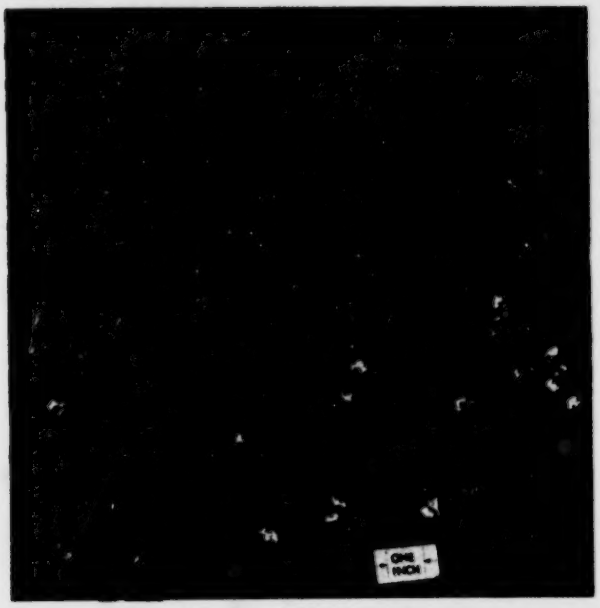
Recommended Use: In order to apply proper spacing the 'spread' of the shrubs should be taken into account. These plants should only be planted in a garden, or where protected by a **well established** shelterbelt.

CONSERVATION BUNDLE MATERIAL

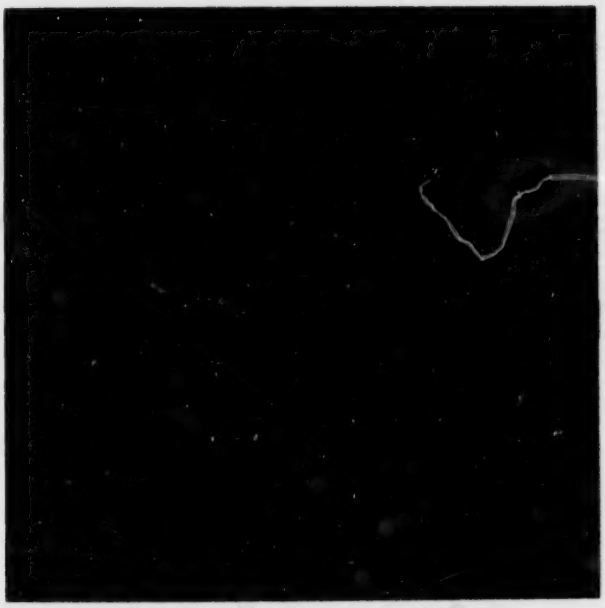
COMMON NAME	SCIENTIFIC NAME	FRUIT VALUE	GROWTH HABIT HEIGHT (m)	SPREAD (m)
Sandcherry	*Prunus besseyi*	Edible, recommended	0.75	1.75
Nanking cherry	*Prunus tomentosa*	Edible, recommended	2.0	2.0
Mongolian Cherry	*Prunus fruticosa*	Edible	1.25	1.5
Korean bush cherry	*Prunus japonica*	Edible, recommended	1.0	1.0
Chokecherry	*Prunus virginiana*	Good for jelly and wine making	5.0	3.0
Blackcherry	*Prunus serotina*	Good for jelly and wine making	5.0	3.0
Pincherry	*Prunus pensylvanica*	Good for jelly and wine making	5.0	3.0
Dropmore cherry	*Prunus* spec.	Only good for wildlife	5.0	3.0
Albol currant	*Ribes missouriensis* 'Albol'	Edible	1.75	1.5
Saskatoon	*Amelanchier alnifolia*	Edible, recommended	2.5	1.5
Hawthorn	*Crataegus*	Only good for wildlife	5.0	3.0
Highbush cranberry	*Viburnum trilobum*	Edible, recommended	3.0	3.0
Red elder	*Sambucus racemosa*	Only good for wildlife	4.0	3.0



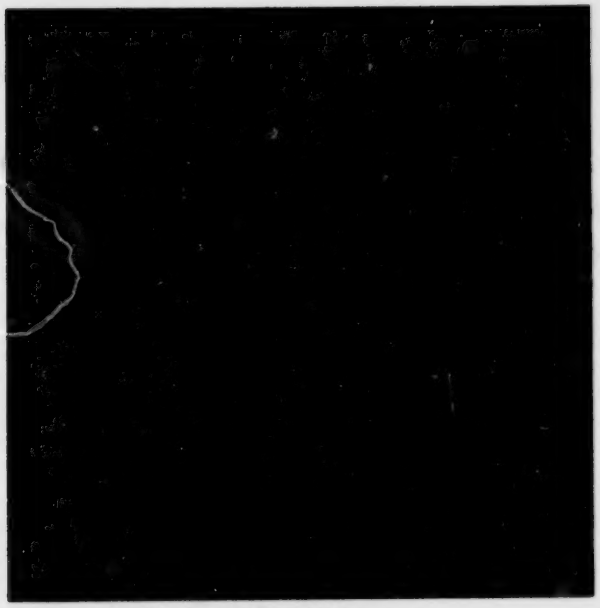
Conservation bundle: sandcherry



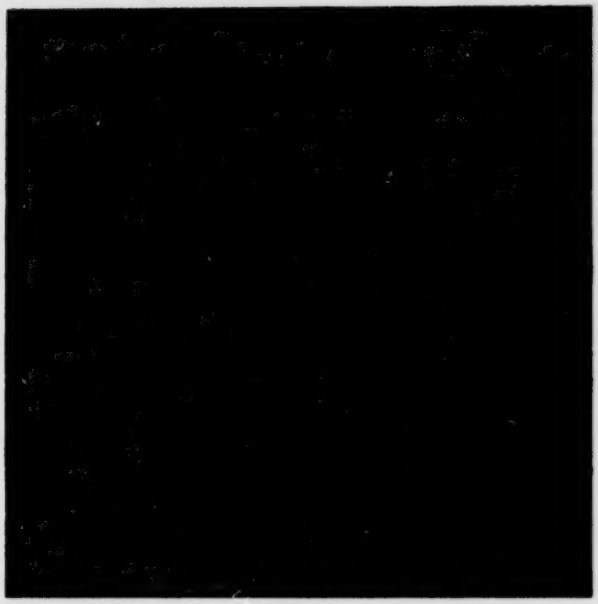
Conservation bundle: Nanking cherry



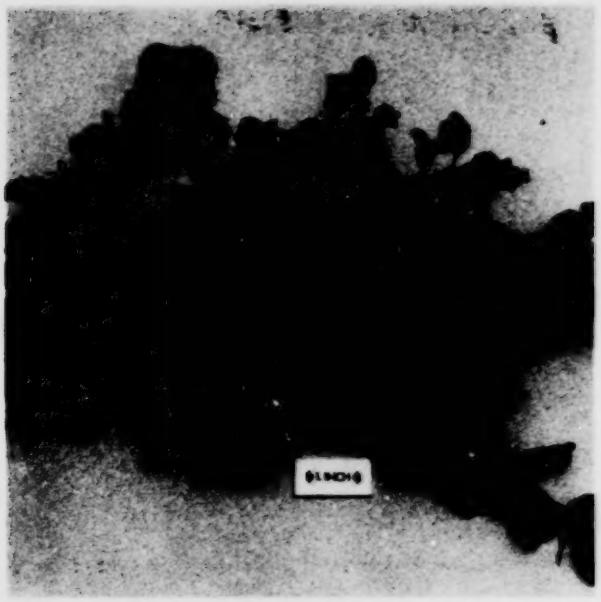
Conservation bundle: Korean bushcherry



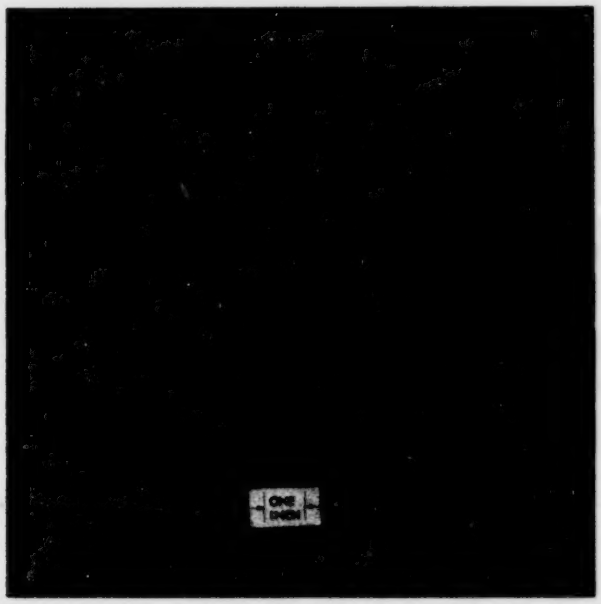
Conservation bundle: pincherry



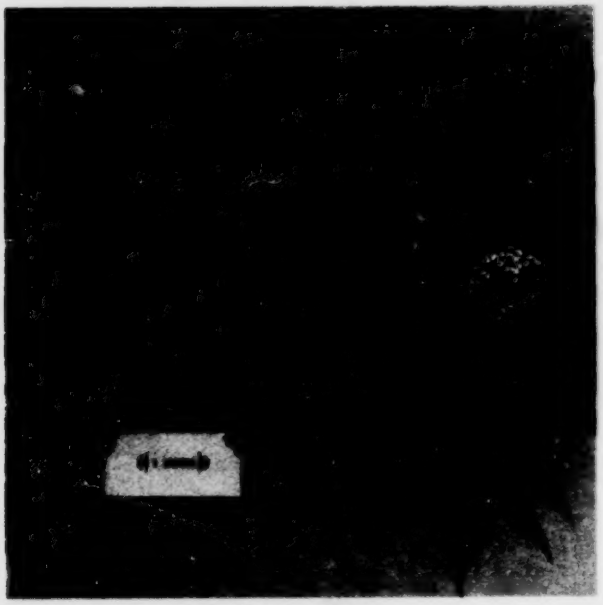
Conservation bundle: albol currant



Conservation bundle: saskatoon



Conservation bundle: highbush cranberry



Conservation bundle: red elder

FARMSTEAD BEAUTIFICATION

INTRODUCTION

"In this land of ours, the untidiness seen along country roads and on farmsteads was not inherited. But the farmer or the countryman who thinks in terms of a better life for himself and his family will support rural beautification and have himself a neat, attractive farmstead. Let's have more Canadians like him."
By John Fisher, Taken from ACTION 10, Centennial Commission, Community Improvement Program.

The art of site planning has as its goal the optimum use of the site for its intended purpose. Site planning involves arranging buildings, developing a road system, determining proper land use, locating utilities and determining the costs of all these improvements. Information on planning is available in another publication entitled *Farmstead Planning.*[1]

In this publication, the subject of landscaping is covered in a much narrower sense. Farmstead landscaping, as described on the following pages, deals with the choice and location of plants and other suitable material for the purpose of site beautification. The aim is to develop an aesthetically pleasing composition around the permanent building structures.

OBJECTIVES OF BEAUTIFICATION

The effort we put forward in making the surroundings of our living quarters more attractive contributes greatly to the quality of our lives. Such involvement challenges the designer to be original. The designer's work creates a long-lasting monument, which is an expression of taste, foresight and understanding of the beautification concept. The designer is concerned with a wide range of objectives; the major ones are:

Comfort:

On a farmstead the best example of designing for comfort is the windbreak. Other examples are the use of shade trees, the provision of surface improvements for roads and walkways and the elimination of snowdrifts on roadways. Vegetative barriers which reduce or eliminate noise, dust and odor are other objectives related to windbreak establishment.

Emphasis:

The aim is to emphasize the most treasured parts of the farmstead site. However, de-emphasizing undesirable views can be an equally important task for the landscape designer. A farming operation often combines, within the farmstead, a series of antagonistic activities. The residence and its immediate surroundings are usually considered to be the attractive feature of the site. Barns, corrals, implement storage yards and feed supplies are considered less attractive elements of the site, and should be concealed from the residential area.

Proportion and Space:

Site planning is the art of organizing space. Whereas horizontal space on the small residential lot in the urban setting is extremely limited, the farmstead scene with its over-abundance of horizontal space requires careful planning to avoid overextending the boundaries of the site. Farmstead beautification blends the individual components of the site together. The farmstead windbreak is, for many farmstead layouts, the outside perimeter of the site. Group plantings of woody vegetation within the developed site can be used to define certain areas – boulevard trees along the main entrance road or hedge plantings around the garden area. Grouping small granaries close together avoids a cluttered appearance and makes them function as one larger unit. Fences serve the dual purpose of confinement and boundary marking.

Harmony:

Many farmsteads are developed or established in the shelter of remnants of native forest cover. Such a setting is suited to informal landscape design. Native plants can be used in harmony with the site. On the treeless prairie, the landscaped farmstead is in contrast with the native vegetation. It gives the impression of an oasis in an otherwise treeless landscape.

Using repeated groupings of the same plant material on a farmstead site creates a harmonious unity, whereas the use of individual specimens of different species gives a disjointed appearance.

[1] See page 76 for availability of other references mentioned in this booklet.

Design:

A natural looking setting appears to be the general trend for farmstead beautification in Alberta. In a natural setting there is little need for strict symmetrical balance. Rigidly pruned trees and shrubs do not create a natural appearance. The landscape designer should keep in mind what style he intends to create, whether formal or informal, and avoid superimposing one on the other. Simplicity in design will result in clarity and will be more effective. A certain degree of unity or style should be the aim of the overall plan.

Rhythm:

This concept of aesthetics is closely related to harmony and design. A number of similar features, repeated at regular intervals, creates rhythm. Rhythm can establish balance if repetition occurs on both sides of a centre line.

Flexibility:

With time the need, desire and taste of the users of a farmstead site will change. Tall-growing woody plants require many years to mature. A well thought-out plan allows for change. Using temporary plantings that will allow for more space to be taken up by tall growing trees as they mature is one example of flexibility. Temporary buildings might be accommodated in a developing plan, and overmature plant material can be phased out.

Cost:

Any plan has to be realistic in its budget requirements. Although the initial cost of designing and establishing a plan can be substantial, the subsequent maintenance cost will become more important with time. Hence, the maintenance requirements should be within the capabilities of the user.

Since farmers are heavily committed to their farming operation during the active growing season, which is also the time when site maintenance is most necessary, a low maintenance landscape layout is very desirable. The added responsibility of maintaining large grounds could become a burden.

DISTINCTIVE PARTS OF THE FARMSTEAD

For farmstead beautification purposes the farmstead area can be subdivided into the following components:

- farmstead shelterbelt
- public area
- private area
- service area
- see Figure 2 on page 5

Farmstead Shelterbelt

Major shelterbelt plantings should be on the windward side of the farmstead (see wind rose maps in *Farmstead Planning* for the direction of prevailing winds in your area). For example, if the prevailing wind is from the northwest, plant the shelterbelt on the north and west sides of the farmstead. Less protection is recommended for the other exposures. Consider the following points when planning your shelterbelt.

- Select an area which is large enough to allow enclosure of all buildings and activity areas without crowding. Keep future expansion in mind. The tall-growing trees should be located at least 30 m from buildings.
- Remember that snow banks will develop within 30 m of shelterbelts.
- Protect the prevailing wind side of the farmstead with a multiple-row planting. It should consist of a hedge on the windward side of the windbreak, one or two rows of deciduous plants in the centre and a row of evergreens on the protected side.
- Follow the recommended spacings.

Public Areas:

The public area is the part of the farmstead generally viewed by the public when approaching the farm. The entrance road leading into the farmstead, its immediate surroundings and the front of the residence are the major parts of the public area. Putting your name and business identification at the access approach is a gesture of good public relations. A tasteful sign can be an interesting detail of a beautification program.

The main road leading into the farmyard will carry a lot of traffic. Ensure that there is a clear line of sight between the highway or country road and the main farmstead access. A hedge planted along the west or north side of an access road should be at least 60 m from the road so that snow drifts do not accumulate on the road. A recommended form of landscape design for access roads over 90 m long is the planting of a row of boulevard trees alongside it. Boulevard trees should be spaced 9 to 12 m apart. If more than one variety of tree is used, plant them in a regular mixing pattern to create rhythm and harmony (alternate two varieties). Plant boulevard trees only along one side of the road. If you wish to plant them down both sides be sure that you provide sufficient space for the road.

The major effort for landscape beautification should be on the area immediately surrounding the farm house. A spacious setting for the house, surrounded by an open lawn, will place emphasis on this building. However, the space around farm houses can be so plentiful that ground maintenance becomes too laborious. Lawns in the public area should not exceed 900 m^2 as the maintenance of a lawn this size would be too time consuming. The area beyond the residential grounds, for simplicity's sake given here as 30 m x 30m, should be separated from the landscape design.

A hedge, group planting of trees, or the continuation of a row of boulevard trees is useful in establishing a boundary between the landscaped and unlandscaped parts of the public area.

Trees and shrubs planted around the house should be used in groupings rather than as individual specimens. Tall-growing trees close to the house should be planted so their mature structure complements the building, but does not obscure the house from the observer entering the farmstead. Shrubbery planted around the house should not overgrow windows, sidewalks or entrances. Correct selection of plants according to the mature height and spread, adaptability to the site (tolerance to shade and moisture requirements), and plant characteristics (seasonal color and time of flowering) are of utmost importance. Use foundation plantings around the farm house sparingly, but place considerable attention on delineating areas. This means blending in or separating the public area from other parts of the farmstead, the windbreak and the private and service areas.

Private Area

The private area is developed for relaxation and enjoyment of the outdoors and is often referred to as 'the outdoor living room'. It is probably the smallest of the three distinctive parts of the farmstead, but it proves the most interesting of all when it comes to landscape design.

The private area should be easily accessible from the house. It should be part of the view from the living room windows. Often, the private area is closely related to the vegetable garden and orchard, although these are considered to be part of the service area. Privacy within the private area itself is a major objective of design. It should be in a warm sunny location with provision for shade. It is the place for lawn furniture and a patio. If you are considering other such features as a permanent barbeque, garden pool, bird bath, summer house, or swimming pool, plan to include them in the private area.

The ultimate design will depend entirely on the taste, need, and means of the owner.

The design principles given in the 'Objectives of Beautification' section (page 27) apply to smaller settings as well as to larger areas. It is impossible to recommend a strict set of rules on how or how not to develop a layout. You must express your particular interest and needs in the scene you intend to develop. A careful analysis of these desires and needs, awareness of the consequences, and a well-thought-out plan are the necessary steps in a successful landscape design.

Service Area

This is by far the largest area of the farmstead. Here is where you can expect to find the greatest amount of activity. Although the need for beautification is minimal in this area, it is often desirable to establish screen plantings to separate the private and public areas from the service area.

The garden area is considered to be part of the service area. Naturally the garden should be located on the most fertile soil. The sheltered area close to the farm windbreak is also useful for growing crops that are sensitive to wind damage.

ACTION PLAN

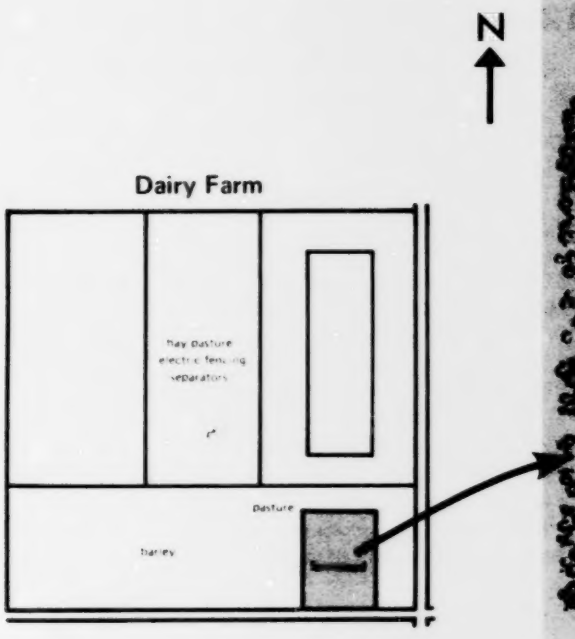
Your farmstead beautification program can be organized by drawing several plans. Three types are recommended:

- Total farm property (Figure 3)
- Base map of the farmstead (Figure 4) and overlay.
- Detailed plan of the private and public areas (Figure 6).

Total Farm Property

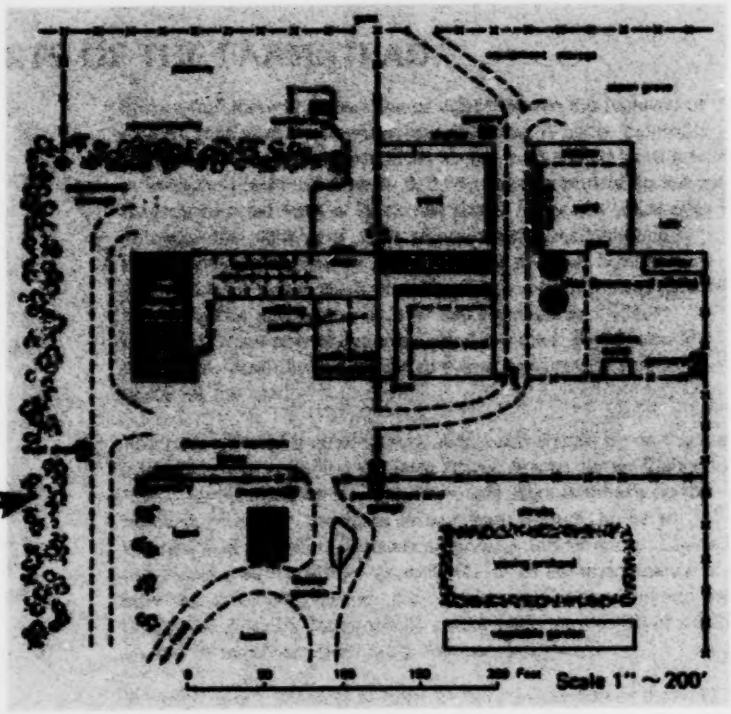
Draft a quick, simple sketch of the farmstead in relation to the entire farm property. This and all other maps can be oriented by a north arrow directed toward the top of the page.

Figure 3. *Shows the components of the farmstead area.*



Total Farm Property
Scale 1" ~ 2000'

Figure 4. *Base map*



Base Map

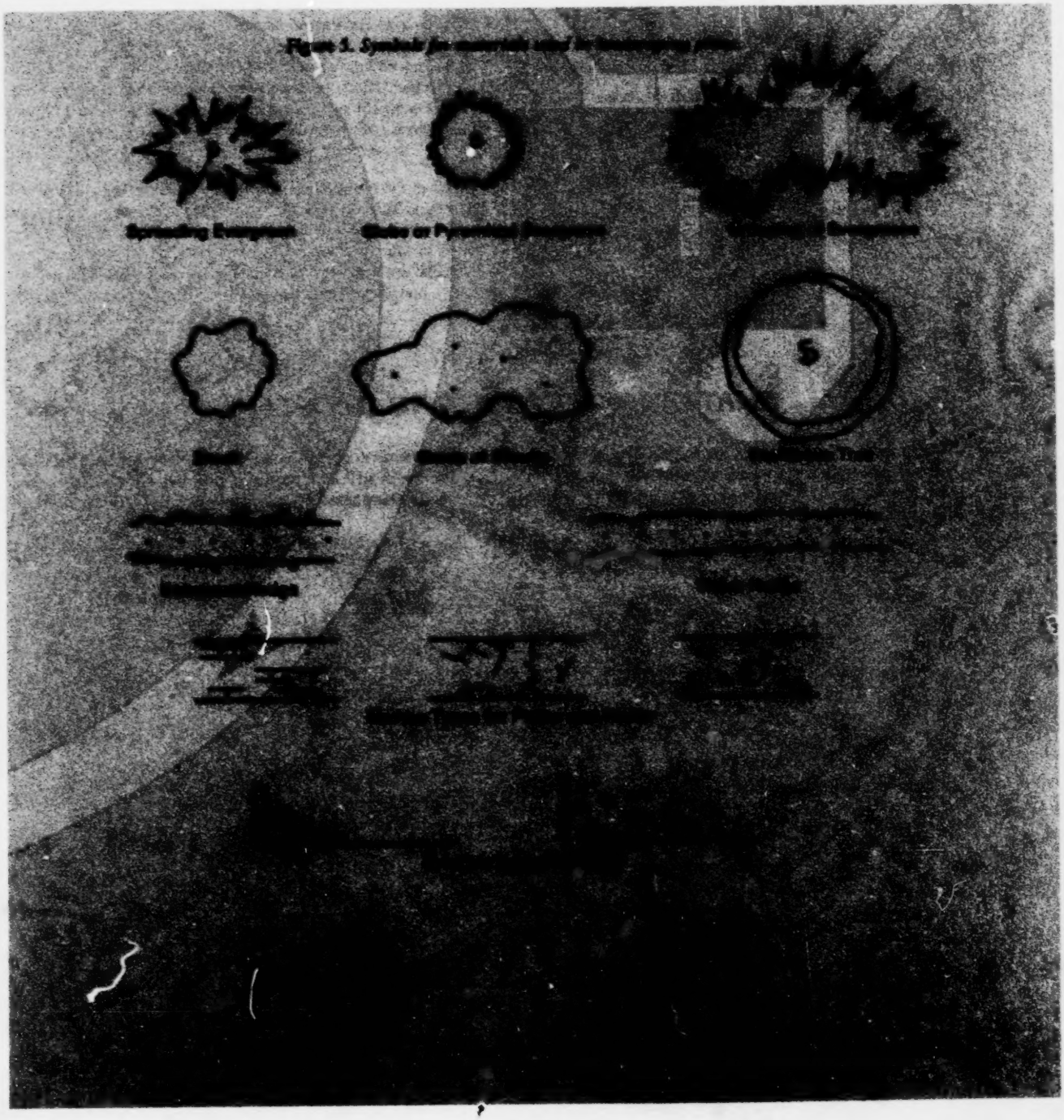
A base map is invaluable for showing the efficiency of the total farmstead layout. It is convenient for locating windbreaks and other major screen plantings as well as deciding where the garden should be located. A scale of 1 cm = 30 m is convenient for this type of plant

Mark all permanent structures, roads, utility lines and existing vegetation on the map. Be familiar with other features such as slope, drainage patterns, views and sources of noise, dust and smell. If you wish, these features can be included on your base map by using contour lines for slope and other symbols (arrows, plus and minus signs, dots and so forth) for the other site conditions.

When the base plan is completed, use a transparent overlay to sketch in landscaping material. Use the symbols shown in Figure 5. Remember to space trees and shrubs on the map to allow for their mature horizontal dimensions. The *Alberta Horticultural Guide* is an excellent source of information on mature sizes.

Final Plan

Draw the final detailed landscape plan of the private and public areas using a scale of 1 cm = 5m to 1 cm = 10 m. Show the location and species names of all plant material and indicate other features such as walks, patios and barbecues, etc. Use the symbols shown in Figure 5. Improve the coloring and shading if you wish.



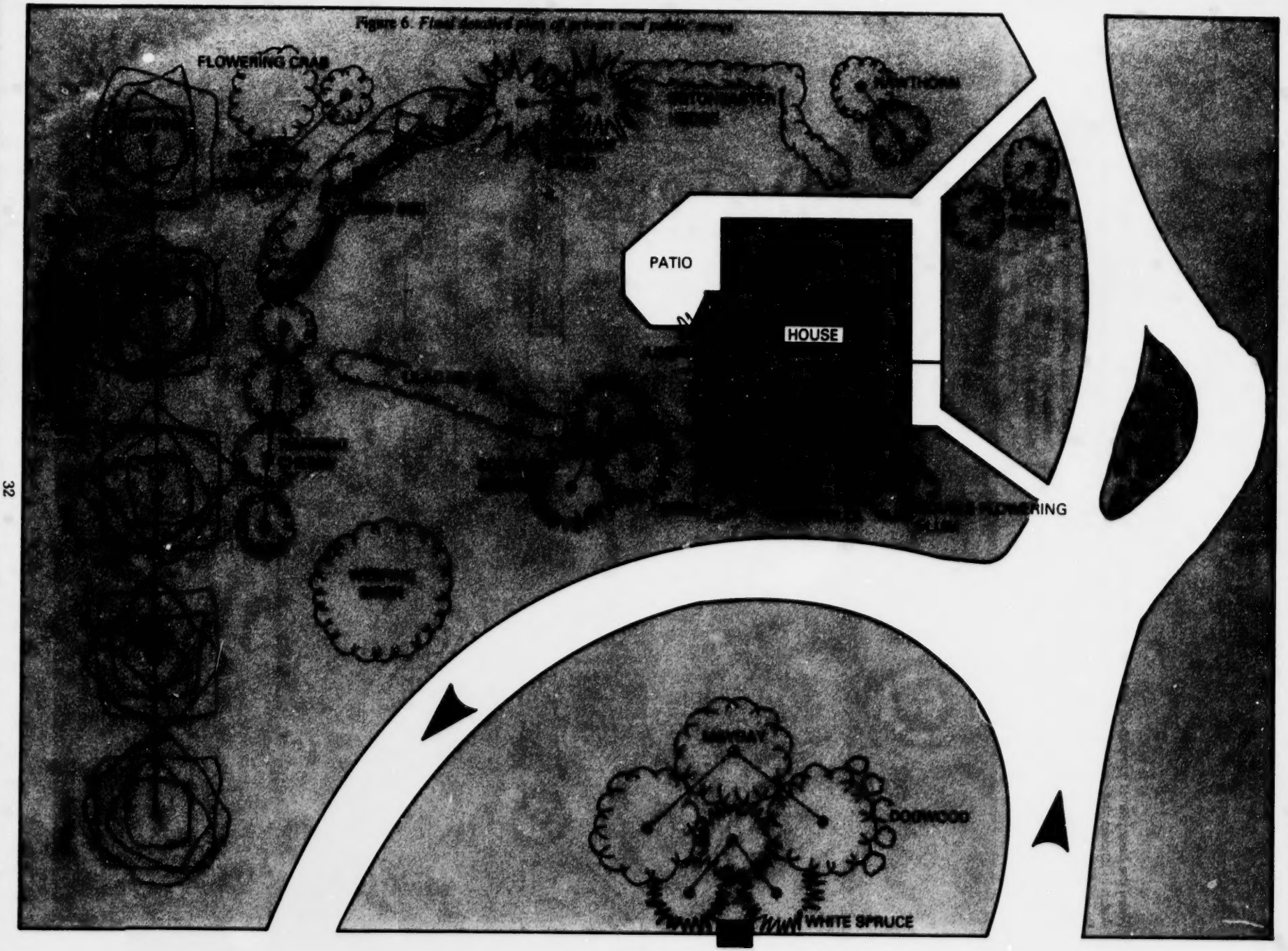


Figure 6. Final detailed plan of private and public areas

MATERIALS FOR LANDSCAPING

The natural assets used in landscape beautification are earth, rock, water and plants. The first three are fundamental parts of the natural landscape, but use them sparingly. Plants are the farmstead landscaper's main tool for making the scene attractive and pleasant to live in.

In addition to these four major forms of landscaping material, the designer can add such details as a sign or an object of art (statue) or any other material. Detail material can also be used for functional purposes – bark chips as a mulch or lattice work for guiding climbers – or it can be strictly ornamental (e.g. a piece of driftwood). Large pieces of rock, if used as part of a design, can express power and durability. Boulders are useful for building retaining walls. When combined with alpine plants, they can be used to create miniature mountain landscapes. Flagstones can be used effectively for walks or paving. Gravel is often applied as a groundcover and its color and texture can add interest.

Water offers the landscape such unique characteristics as movement, sound, and reflection. Take advantage of any natural body of water by using it in your overall landscape design. However, avoid artificial uses of water in such features as ponds and streams unless you are prepared to cope with the difficulty and costs associated with their maintenance and construction.

Plant Selection:

Plants are used to:

— provide major landscape features (lawns and shelterbelts)

— divide a space or screen a view (hedges)

— accentuate or soften the shape of buildings (foundation planting)

— create a contrast or establish unity; with color (flowers and foliage), shape or texture

— create interest by using exotic plant material.

Consider the following characteristcs when selecting plants:

— suitability (hardiness, nuisance effects – litter, poison, insects)

— mature size (height and width)

— flowering habits

— seasonal change

— susceptibility to disease and insect damage

— environmental requirements of the plants, (soil, shade and moisture)

— maintenance requirements such as pruning.

LISTING OF WOODY ORNAMENTALS

In Alberta we have a large number of woody ornamentals which can be used for landscaping home grounds. The *Alberta Horticultural Guide* lists 260 varieties of hardy trees and shrubs.

On the following pages you will find illustrations of 75 of these woody plants. The picture and brief description of the landscape value of these plants are intended to aid amateur landscape designers in selecting suitable material for home and farmstead beautification.

THE USE OF TREES AND SHRUBS IN THE LANDSCAPE

Trees Around the Home Grounds

Trees are the most important part of your landscaping. Since most new homes are erected on bare sites, the landscape designer has to select the types of trees and place them for purposes of shade, screening and beauty. Shape, ultimate size and hardiness are important considerations in selecting a tree.

Maintenance

Most trees are placed on the site while still small. Rapid growth will follow and the small plants develop into tall wide-spreading structures. Knowing how to prune properly and how to develop desirable shapes is an integral part of landscaping.

Shrubs in the Landscape Design

Woody plants with a mature height of less than 4.5 m are usually classified as shrubs, while taller plants fall into the category of trees. Shrubs have branches coming from the base and their special merit is demonstrated in the nature and color of the foliage, flower, their shape and the display of colorful fruit. Most shrubs require annual pruning for shaping, rejuvenation and optimum flower production.

Shrubs Are Mainly Used As Follows

- — to blend buildings in with the surrounding grounds
- — to serve as a background for border plantings
- — to form a screen to cut out undesirable features in the landscape
- — as accent plants, displaying the particular merits of the shrub itself.

TALL SHADE TREES – CONIFEROUS

SCIENTIFIC NAME:
Picea glauca

COMMON NAME:
White spruce

This tall growing native evergreen will develop into a majestic cone shaped tree. The tree is fully hardy throughout Alberta and will adapt to a great variety of growing sites (including partial shade and dry locations). The dark green foliage is spread out on horizontal branches. The ultimate size of the tree will limit its use to larger landscape sites (e.g. farmsteads). The wide spreading bottom branches make the tree unsuitable for narrow boulevard plantings.
(Insert spruce shelterbelt picture here)

SCIENTIFIC NAME:
Picea pungens

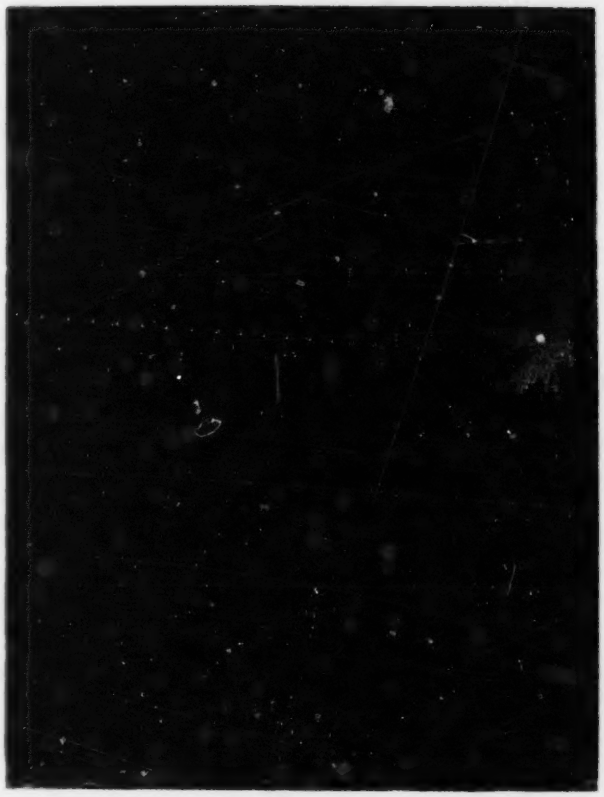
COMMON NAME:
Colorado spruce

Similar in shape, size and growing habit to the white spruce; the outstanding merit of this tree is the blue green color of its needles. Several cultivars (with silvery blue needle colors) have been selected such as Koster Blue and Morden Blue. It is undoubtedly the most frequently chosen tall growing evergreen for home landscaping.

SCIENTIFIC NAME:
Picea abies

COMMON NAME:
Norway spruce

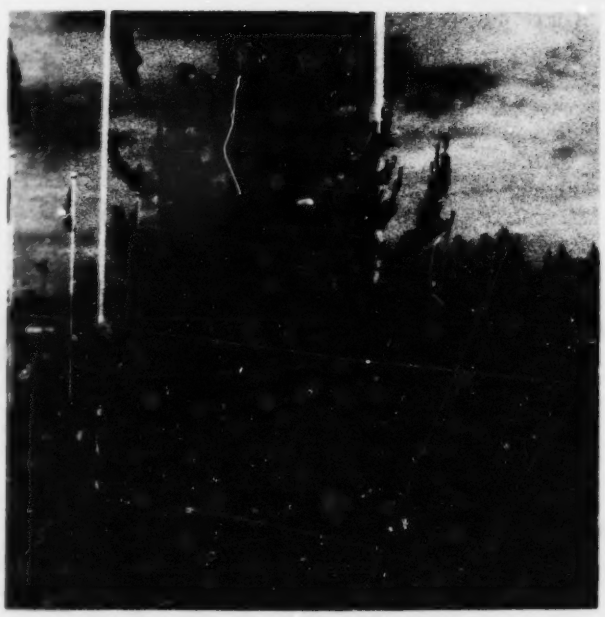
The Norway spruce is Europe's tallest native tree: 60 metres is within its reach. It was planted and admired as long ago as 1500. Much of the light lumber Britain bought in the Baltic was derived from Norway spruce, and the word 'spruce' is thought to have come into the English language from the same source. Today in most of northern Europe it is, at any time of year, 'the Christmas tree'.
It is frost-hardy from the start. For the gardener its importance lies in its profusion of off-beat cultivars. It comes in drooping, upright, golden, dwarf, bush, prostrate, tabular, globular, congested and exploded forms. It will do well in semi-shaded or full sun areas. In Alberta the mature height is less than 35 m. (In this picture only the two trees on the right are Norway spruce.



SCIENTIFIC NAME:
Pinus contorta latifolia

COMMON NAME:
Lodgepole pine

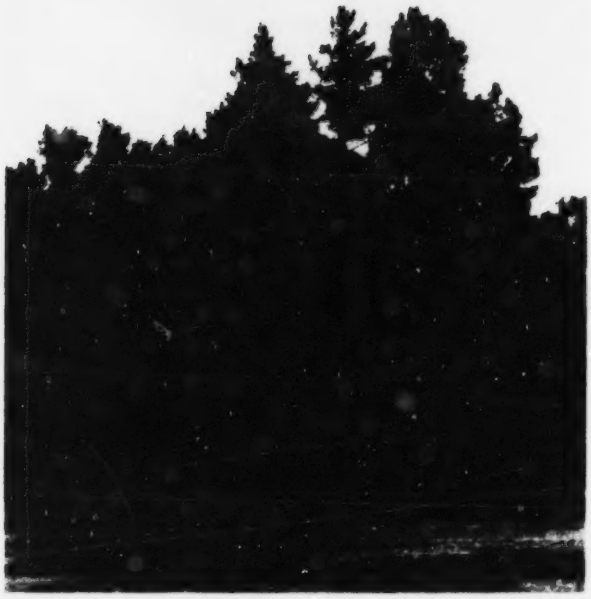
This tree is native to the foothills and Rocky Mountains of western Alberta. The straight slender stem and the dense foliage of this evergreen make it an attractive feature in landscape design. Young trees are difficult to get started and only healthy looking, well rooted specimens should be used. This tree requires full exposure to sunlight, and adapts itself well to drier sites. The mature size of a lodgepole pine (a height of 15 m and a spread of 6 m) indicates that it should be used with caution on smaller lots.



SCIENTIFIC NAME:
Pinus sylvestris

COMMON NAME:
Scots pine

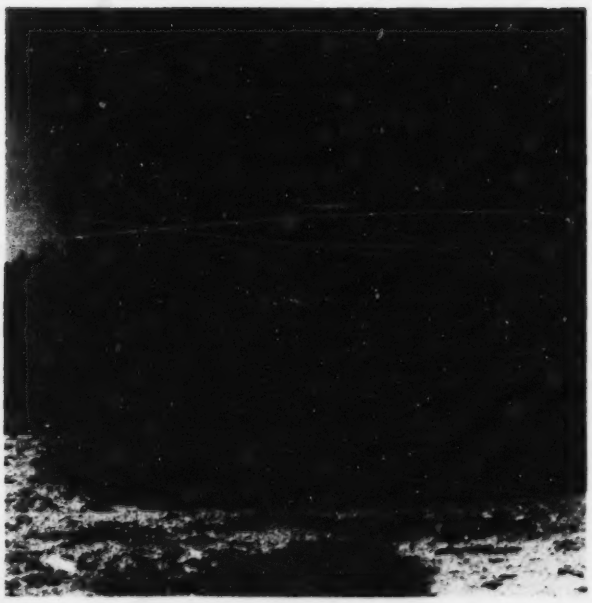
This tree is widely used as an ornamental as well as for other purposes (e.g., as a Christmas tree). Although not native to Alberta, the tree is quite well known and has established itself as a useful ornamental. In size and potential use it is comparable to the lodgepole pine. The tree displays a more open branching pattern than the lodgepole pine and the upper parts of the trunk are an orange color.



SCIENTIFIC NAME:
Pinus ponderosa

COMMON NAME:
Bull pine – ponderosa pine

Although not many other specimens of this tree are found in Alberta, it is recommended as an accent plant for hot and dry exposures. Mature height is 12 m and spread is 5 m. Native to southeastern British Columbia, this tree can survive on extremely dry slopes. The needles are placed in bundles of three and are 12-25 cm long. They form an attractive feature of this plant.



SCIENTIFIC NAME:
Larix siberica

COMMON NAME:
Siberian larch

The larch is a tall-growing deciduous tree, up to 12 m in height, with a conical shape. The horizontally spreading branches carry light green colored needles which turn to a bright yellow each fall. This seasonal change makes the tree particularly suitable for use as a specimen tree in landscaping. The wide spreading branches make it necessary to allow for a spacious setting. The tree is relatively free of insect and disease problems and has no nuisance characteristics.

TALL SHADE TREES — DECIDUOUS

Nuisance Effects of Trees

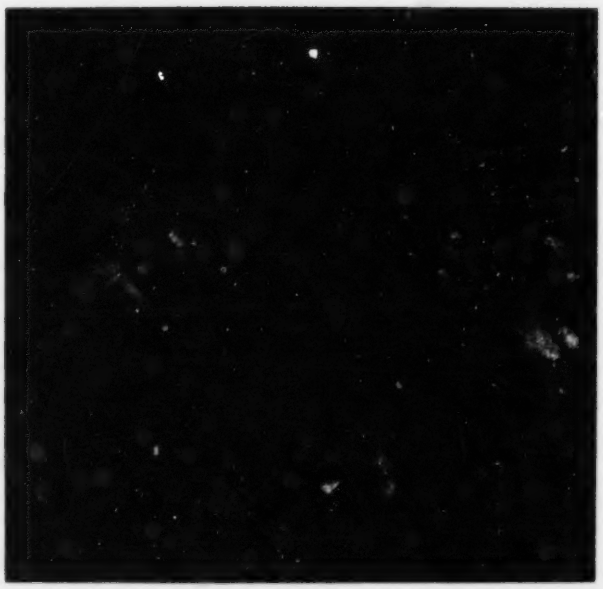
Just as there are no roses without thorns, most woody ornamentals have some undesirable features.

Poplars — The female clones produce fluff. The Russian poplar and plains cottonwood are examples.

Aphids — The Manitoba maple and American elm are good host plants for these pests.

Seeds — Ash, Manitoba maple and caragana seeds germinate to become weeds.

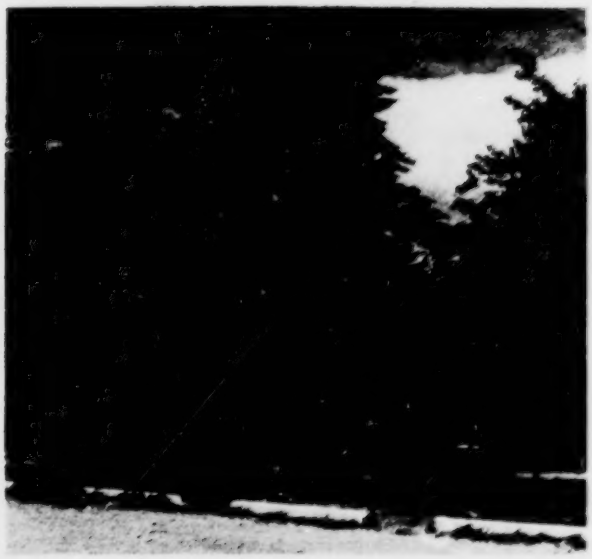
Suckering — Dogwood, lilacs and poplars tend to spread by means of suckers.



SCIENTIFIC NAME:
Populus balsamifera

COMMON NAME:
Balsam poplar or black poplar

A large portion of the present day agricultural area in Alberta was originally covered with poplar trees, while the southeastern corner of the province formed the treeless grass prairie. In the aspen parkland and the mixed wood forest region, the landscape is typified by many bluffs and knolls of trembling aspen often intermixed with balsam poplar on moist lowlands. Many farmsteads are still surrounded with trembling aspen trees, and these homesteads benefit greatly from the shelterbelt which these trees provide.



SCIENTIFIC NAME:
Populus tremuloides

COMMON NAME:
Trembling aspen or white poplar

These small remnants of the original forest vegetation conbribute greatly to the quality of our present day rural landscape scene. Unfortunately, many of these poplar bluffs are in danger of being destroyed by grazing and wild fire. Much more attention should be given to the protection of these native farm and field windbreaks. Fencing against livestock is a simple and effective way of preserving these native poplar stands. The balsam poplar will survive as an individual tree in a landscaped setting, but the trembling aspen should be grown in a group setting with native shrub vegetation as a ground cover. The white bark and bright green foliage make the aspen tree attractive as a grouping. Mature trembling aspen are 15 m in height and 5 m in spread.

SCIENTIFIC NAME:
Populus deltoides occidentalis

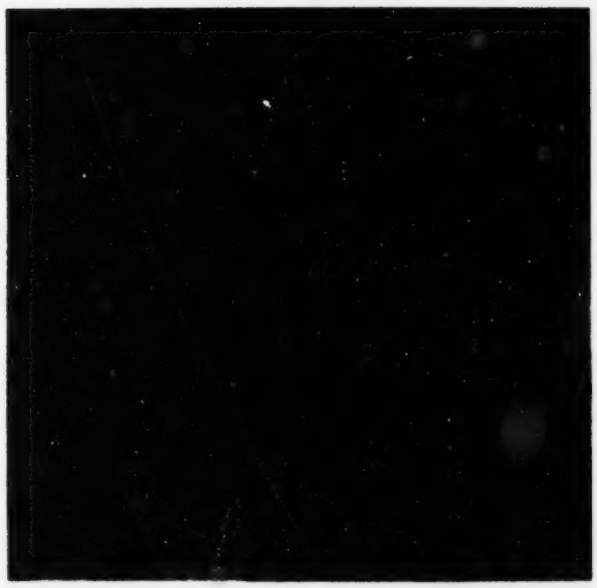
COMMON NAME:
Plains cottonwood

The native poplar of the river flats in southeast Alberta was used extensively by the early settlers for farmstead shelterbelts, boulevard planting and general beautification. Although poplars are usually referred to as short-lived trees, the plains cottonwood appears to be the most resistant against disease. Many of these trees in the Lethbridge – Medicine Hat region are 60 to 70 years old and are still going strong. Much more effort should be made to make this tree available from commercial nurseries. Since it will develop into a massive structure, 24 metres in height, this tree is only recommended for wide boulevards, larger farmsteads and parks.

SCIENTIFIC NAME:
Populus x Northwest

COMMON NAME:
Northwest poplar

This poplar is considered to be a natural hybrid between the balsam poplar and the plains cottonwood. The tree was introduced by the Northwest Nursery of Valley City, North Dakota. It is one of the two most desirable large male hybrid poplars in Alberta, the other one being the Brooks #6. Growth habits and general appearance of both these trees are similar. Since these trees develop rapidly after planting, they should only be used in spacious landscape settings. In home landscapes their roots sometimes enter sewer lines and cause the pipes to plug up. The Russian poplar is similar to the Northwest and Brooks #6 poplar but it produces undesirable seed fluff. Mature height of these trees is 20 m with a spread of 15 m.



SCIENTIFIC NAME:
Populus x 'Griffin'

COMMON NAME:
Griffin poplar

This poplar was selected by Mr. Griffin, superintendent of the Brooks Horticulture Station, from a breeding program carried out around 1918. The branches are sharply uprising, which results in a narrow crown. Mature height is 10 m and spread is 3 m. This tree is a male clone selection and, because of its compact size, is very useful as an ornamental for smaller landscape scenes. Griffin poplar can be used successfully as a screen planting on sites where space is at a premium. Topping poplar trees by removing the major parts of the crown is an often practised form of pruning which should be avoided, unless overhead obstructions demand it. Topped poplars have lost much of their natural beauty.

SCIENTIFIC NAME:
Populus x 'Brooks #6'

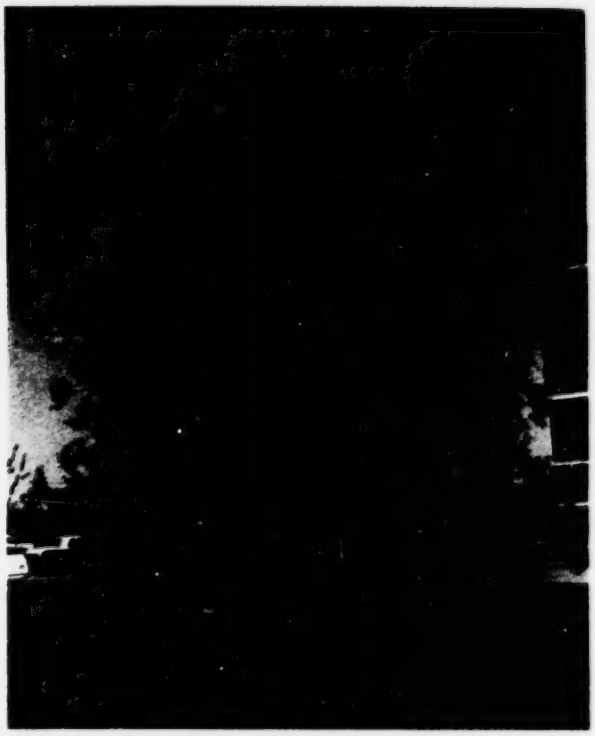
COMMON NAME:
Brooks #6 poplar

A straight tree with good height and a clean trunk. The dark grey bark is fissured and furrowed. The tree is a male selection. The leaves are dark green. The petiole is almost as long as the blade, yellowish, with small glands. Although fast growing and self-pruning at proper spacing, it is susceptible to canker, leaf rust and aphids. Under proper conditions it is tolerant of early autumn and late spring frosts.
It is recommended for industrial plantations on good alluvial soils. Can be used for amenity and farmstead plantations in the central and southern prairies. Care should be taken when planting on home lots as the tree is very large when mature.

SCIENTIFIC NAME:
Salix pentandra

COMMON NAME:
Laurel leaf willow

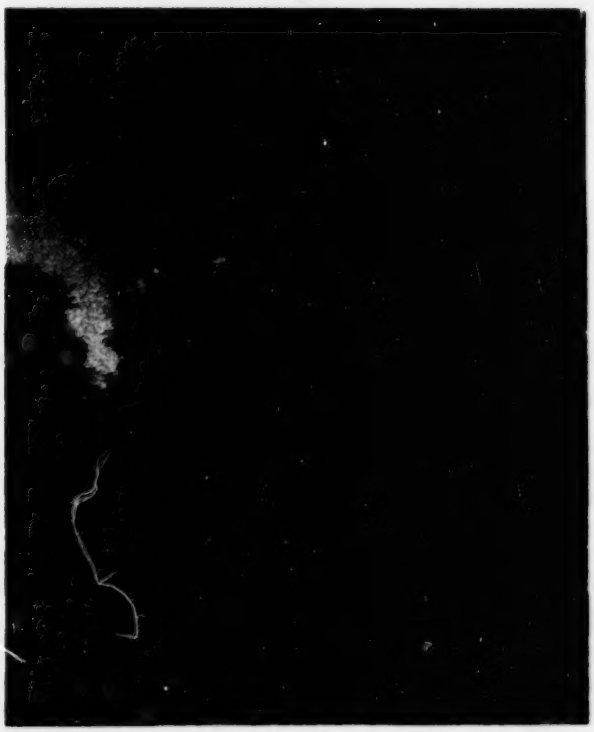
This is a fast-growing tree with a wide spreading crown. Mature height and spread are 15 m each. Willows will adapt to a wide range of soil and site conditions, but prefer moist locations and should be planted only in settings where plenty of space and headroom is available. The shiny dark green leaves make this tree outstanding, particularly because it retains its leaves late into the fall. If used as an individual shade tree, the young plant should be pruned into a single stem structure. Subsequent repeated pruning is recommended to train the tree in a desirable shape (single stem with regularly spaced branches).



SCIENTIFIC NAME:
Salix acutifolia

COMMON NAME:
Sharp-leaf willow

There are over 30 willow species which are native to Alberta (see Flora of Alberta by E.H. Moss) which means that the willow genus is the most diversified native woody plant in the province. The majority of these willow species are shrublike, however, the peach leaf willow is a native willow tree, (none of the four willow trees illustrated are native to Alberta). The sharp-leaf willow is comparable in growth habit to the peach leaf willow, (mature height is 11 m and spread is 9 m) although somewhat smaller. This tree develops a multiple-stemmed structure if left unpruned. The leaves are long, narrow and light green. Sharp-leaf willow lends itself quite well to wide screen planting.



SCIENTIFIC NAME:
Salix amygdaloides

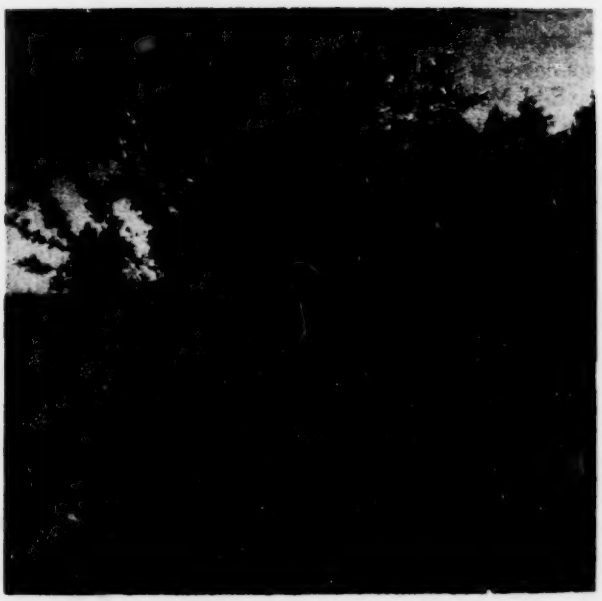
COMMON NAME:
Peach leaf willow

This species is perhaps the largest of the native willows. In Manitoba and Ontario, it attains heights of up to 13.5 m, but elsewhere across Canada it is usually a shrub. The leaf is about 10 cm long by 2.5 m wide, with a long tip, yellowish-green above, much paler beneath, finely toothed.

SCIENTIFIC NAME:
Salix alba vitellina

COMMON NAME:
Golden willow

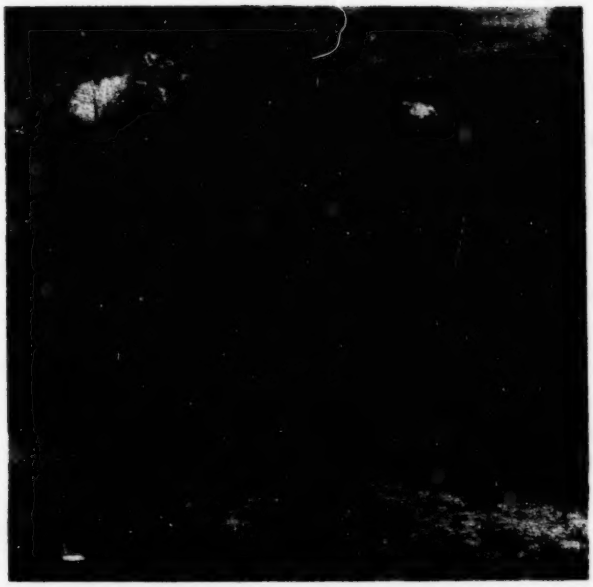
Willows in general are associated with several plant features such as: Tree shape - e.g., weeping willow. Unfortunately we do not have a hardy weeping willow variety in Alberta. Flowers – e.g., catkins. The native 'pussy willow' derives its name from these large catkins. Leaves – Some outstanding leaf colors are known e.g., Siberian white willow. Twigs – e.g., color of the twigs. The golden willow is very decorative in the winter when the golden twigs contrast with the otherwise monotonous landscape.



SCIENTIFIC NAME:
Salix alba sericea

COMMON NAME:
Siberian white willow

As stated above the outstanding landscape feature of this small tree (mature height is 14 m and spread is 9m) is the silvery gray color of the foliage. It is recommended as an accent specimen, where its contrast with green foliage will add to the landscape value.

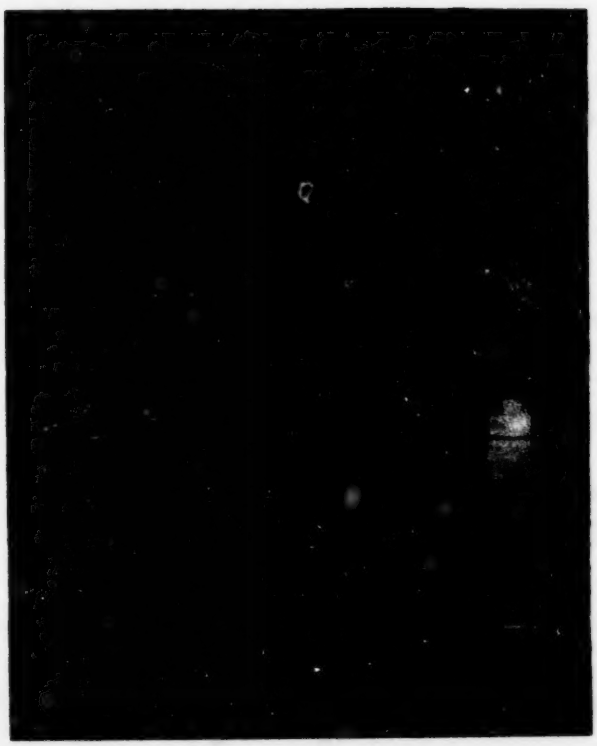


TALL SHADE TREES – OTHER TALL SHADE TREES

SCIENTIFIC NAME:
Betula papyrifera

COMMON NAME:
Paper birch or white birch

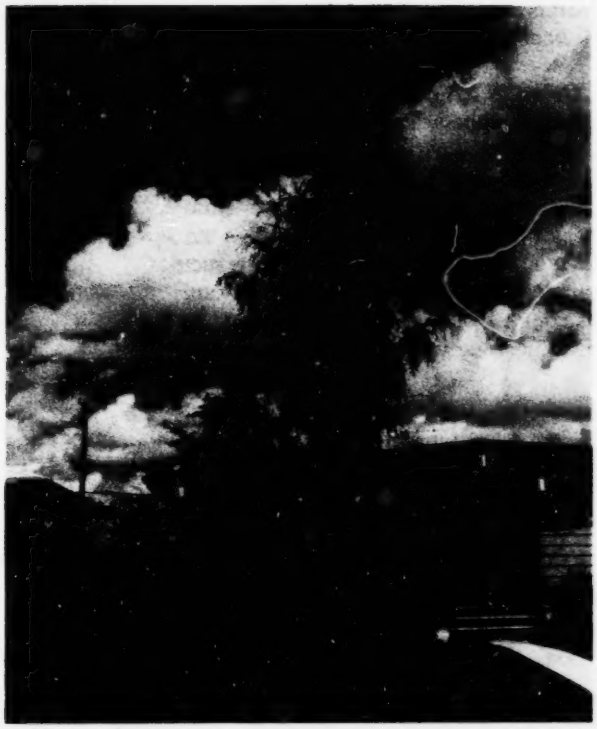
The native birch is a highly recommended medium sized tree for site beautification. The white bark and the fresh green foliage, which turns to a golden yellow in the fall, provide a year round landscape effect. The tree is fully hardy but might suffer from moisture deficiency if used close to buildings and pavements. The tree is often used as a multiple-stemmed clump. Birch trees are fast growing initially, but considered to be rather short lived. Mature birch reach 12 m in height and have a 6 m spread.



SCIENTIFIC NAME:
Betula pendula gracilis

COMMON NAME:
Cut-leaved weeping birch

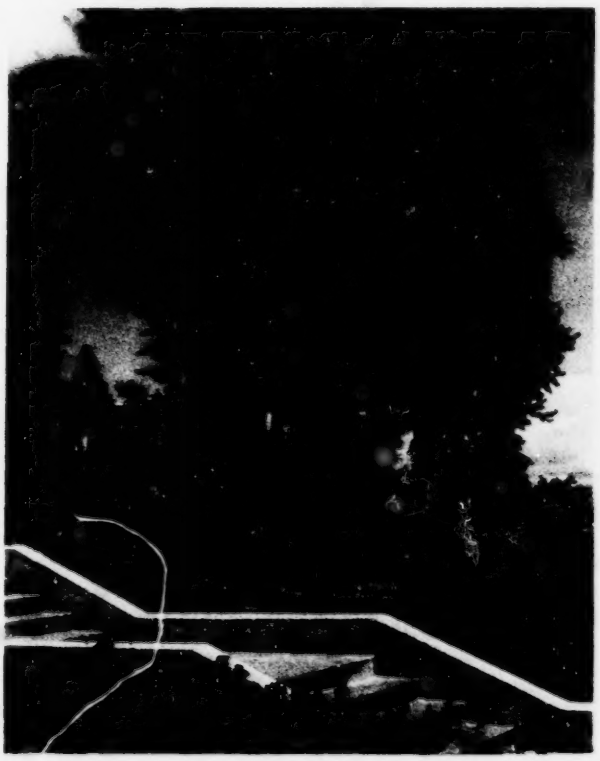
This European selection has drooping branches as its outstanding feature. The tree will become an impressive landscape element if planted by itself on a large lawn. The weeping birch does not fit into small areas where people have to move around. It is not very suitable for screening purposes.



SCIENTIFIC NAME:
Ulmus americana

COMMON NAME:
American elm or white elm

A tall-growing tree of over 20 m with a distinct upright growth habit. The main stem forks into a number of ascending limbs. With early pruning this tree can be trained into a very desirable shape for boulevard planting, and is most frequently used for this purpose. However, the narrow angle between the branches and the trunk creates a weak framework and major side branches will often tear off. Selections of more desirable shapes such as the ascending elm and the Brandon elm have been developed. Dutch elm disease has eliminated this tree from the rural landscape of eastern Canada and it is possible this destructive disease will hit Alberta. Hence, it is recommended that this tree be used in conjunction with another tree of a similar nature e.g. the green ash.



SCIENTIFIC NAME:
Ulmus pumila

COMMON NAME:
Manchurian elm

This elm was introduced from central Asia. The leaves are similar in appearance to the American elm, but much smaller. The tree is wider spreading, but only reaches 10 m in height. Although used as a boulevard tree, it is less suitable for this purpose. Since these trees react quite well to repeated shearing, when planted close together they can be used as a tall-growing hedge. As a specimen tree it is useful for dry and sunny locations.

SCIENTIFIC NAME:
Fraxinus pensylvanica subintegerrima

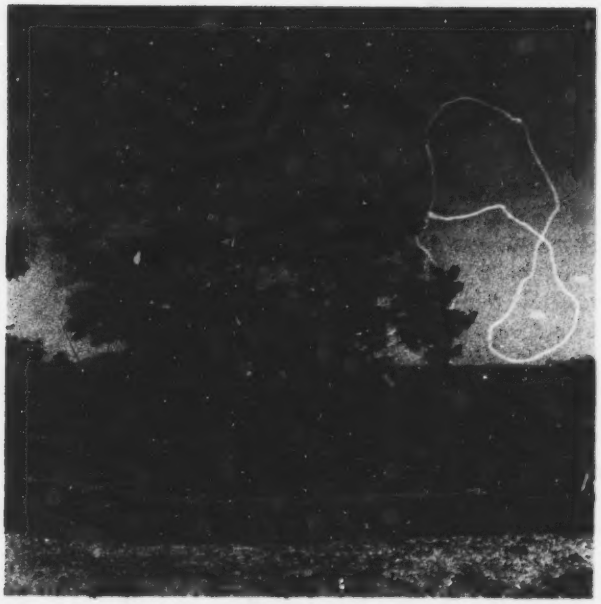
COMMON NAME:
Green ash

The medium sized tree is found in eastern Canada and as far west as southern Saskatchewan. It is very hardy and drought resistant, although the bark of younger specimens sometimes suffers from sunscalding. The leaves appear towards the end of May and are the first to turn color in the fall. However, the tree is highly valued as a boulevard tree, mainly because of its low moisture requirements. The mature height of green ash is around 15 m.

SCIENTIFIC NAME:
Fraxinus nigra

COMMON NAME:
Black ash

Similar to the green ash, the black ash requires more moisture.



SCIENTIFIC NAME:
Quercus macrocarpa

COMMON NAME:
Bur Oak

This tree is a native of Manitoba and has proved itself quite hardy on the Canadian prairies. It is a slow grower and does not transplant easily. This might be a why it has not found wider acceptance as a shade tree. However, wider use for boulevard planting or as a specimen tree is recommended. Mature oaks are rare but the tree can reach a height of 12 m and a spread of 6m.

SCIENTIFIC NAME:
Tilia americana

COMMON NAME:
American basswood

This is another tree native to southern Manitoba which is suitable in Alberta for ornamental planting. However, not many specimens of this type are found on the Alberta landscape scene. The introduced species 'small leaved linden' is also recommended for town and farmstead beautification. Mature basswood are similar in size to the bur oak.

SCIENTIFIC NAME:
Acer negundo

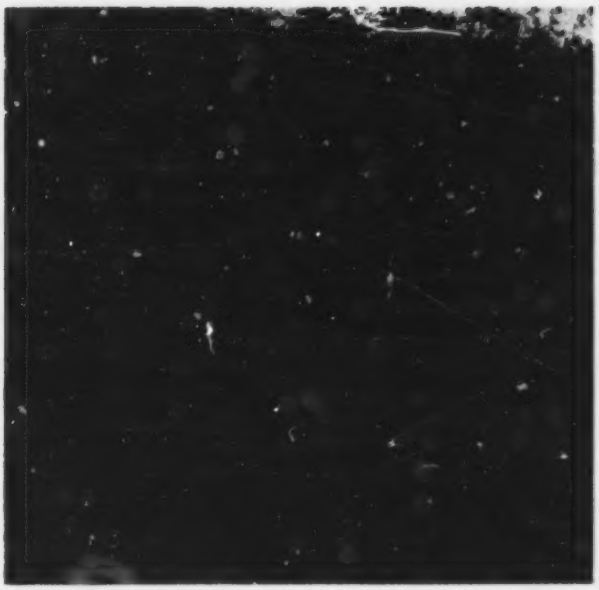
COMMON NAME:
Manitoba maple or box elder

This medium sized tree with a mature height of around 14 m is native to river valleys in the extreme southeast corner of Alberta. After becoming established it grows quickly and develops into a low headed irregularly branched structure. The branches break easily and exposed bark is often damaged by sunscalding. The leaves seem to attract aphids which make this species less desirable as a shade tree. The foliage is very sensitive to 2, 4-D spray drift. Otherwise this tree is very hardy and drought resistant and can be used successfully for screen planting.

SCIENTIFIC NAME:
Acer ginnala

COMMON NAME:
Amur maple

Although grouped here with tall shade trees this maple does not develop into much more than a tall shrub up to 5 m in height. Since the shiny, three-lobed leaves change to a brilliant red fall color, the shrub should be used keeping this feature in mind. It is recommended as a tall-growing background planting. The shrub suffers slightly from winterkill.



SMALLER SHADE TREES

SCIENTIFIC NAME:
Prunus virginiana

COMMON NAME:
Common chokecherry

When of tree size, this species generally has a slender, inclined or twisted trunk that does not taper much, but is often crooked. The crown is narrow and irregular, and is composed of mostly upright to slightly spreading slender and crooked branches. Chokecherry is a variable species with several recorded varieties and forms. In its different forms, this species is transcontinental in distribution. Relatively intolerant of shade, it is commonly found on rich moist soils in open situations, such as fence lines, along streams, on cleared land and bordering wooded areas.
Usually a shrub, in favorable situations it becomes a tree up to 10 m in height and 15 cm in diameter. The leaves are broadly oval, broadest above the middle, rather abruptly tapered at both ends, particularly at the short sharp tip; 7 – 10 cm long, quite thin, dull green on top, greenish and hairless on the lower surface, except for occasional tufts of hair at the junctions of the veins; margins with fine, sharp, closely spaced, even-sized teeth, each tooth ending in a straight hair-like point.
The bark is smooth, or with fine scales, dark grayish-brown becoming almost black on old trees; horizontal markings common to most cherries and plums not noticeable. Of no commercial importance. The tree is too small and scattered for profitable harvesting. This fruit, after being pounded into a mush , was used in making pemmican.

SCIENTIFIC NAME:
Prunus virginiana 'Shubert'

COMMON NAME:
Schubert chokecherry

This is the purple-leafed form of the native chokecherry. Young leaves which are light green turn deep purple with age. The tree has an upright growth habit, and because of its leaf color and mature height of 7.5 m, is a highly recommended shade tree for use on smaller sized lots. The common chokecherry can also be used as a small landscape tree. Here the flowers, which appear towards the end of May, are the main ornamental attraction.

SCIENTIFIC NAME:
Prunus maackii

COMMON NAME:
Amur chokecherry

This exotic tree has been introduced from Asia. The leaves are much longer than those of the native chokecherry, but flowering habit is the same. Another outstanding feature of this tree is its light red-brown bark. Recommended for smaller sized landscape scenes.

SCIENTIFIC NAME:
Sorbus decora

COMMON NAME:
Showy mountain ash

This is probably one of the most commonly used smaller shade trees. Mature height is 7.5 m). There are two other mountain ash of similar merit, namely the European mountain ash and the American mountain ash. Mountain ash is particularly well known for its large clusters of red berries. The leaves turn to a reddish brown during the fall. The light brown bark makes an attractive contrast against the snow landscape. Unfortunately, this smooth bark is quite susceptible to sunscalding. The tree is susceptible to fireblight.

SCIENTIFIC NAME:
Prunus padus commutata

COMMON NAME:
Mayday tree

The abundant flower display around the second half of May is the main feature of this ornamental shade tree. It can be trained into a single-stemmed tree or used as a multiple-stemmed structure. Because the branches are rather wide spreading, maydays need a relatively large area for their mature size. Mature height is 7.5 m and spread is 6 m. The mayday can be used quite effectively in group plantings on farmsteads.

SCIENTIFIC NAME:
Prunus americana

COMMON NAME:
Wild plum

This tree is another representative of the genus prunus (see mayday, chokecherry, pincherry). All have the spring flowering habit which makes them attractive in the urban landscape scene. The wild plum is a small shrub-like tree, about 6 m tall, which lends itself to accent planting. The early white bloom will herald the spring season.

SCIENTIFIC NAME:
Crataegus

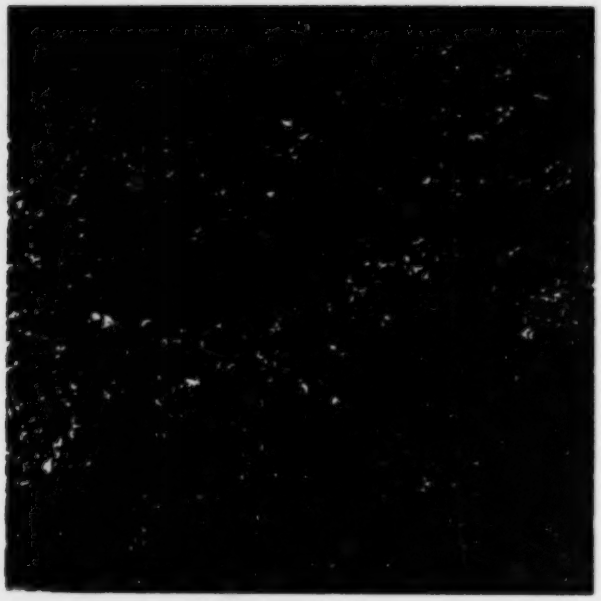
COMMON NAME:
Hawthorn

The hawthorn is a shrub-like tree, 7.5 m high, found in Alberta along river banks and in coulees. Its white flowers appear in large clusters during June, and are followed by red-brown fruit which may persist on the branches long into the fall. The dense growth habit makes this tree useful for screen plantings. A worth while selection is 'Toba' hawthorn which has double pink flowers. This tree is susceptible to fireblight.

SCIENTIFIC NAME:
Malus baccata

COMMON NAME:
Siberian flowering crabapple

This very hardy white spring flowering tree is of medium size, 7.5 m in height. It has been used extensively in breeding programs and several named crabapples have resulted from it, including Dolgo, Osman, and Garnet. These selections are useful for their larger sized fruit, which can be very ornamental as well. The major drawback of most crabapple varieties is their susceptibility to fireblight disease. If crabapples are selected for use in landscaping, the user should be familiar with the appearance and control methods for this devastating disease.



SCIENTIFIC NAME:
Malus pumila var. niedzwetskyana

COMMON NAME:
Rosybloom crabapple 'Royalty'

The rosybloom flowering crabapples are typified by their purplish foliage and pinkish red, red, or deep red flowers. These small ornamental trees are decorative throughout the growing season. Other recommended named selections are Almey, Hopa, Lesley and Strathmore. All these ornamental trees should be used only in well protected locations (sheltered windbreaks, by buildings etc.).

FLOWERING SHRUBS

SCIENTIFIC NAME:
Syringa vulgaris

COMMON NAME:
Common Lilac

The common lilac is such a well known woody ornamental that it hardly needs an introduction. It is used mainly in group plantings or as a tall growing hedge. If used as a hedge, shearing is not recommended since such a practice will remove the purple flower buds. The fact that the common lilac suckers freely is a disadvantage. The many selections and crosses that have been developed from the common lilac are usually referred to as French hybrids. Their bloom color can vary from pure white to blue to deep purple. They are excellent for use as individual specimen shrubs. Lilacs are adapted to a wide variety of growing conditions, but do not thrive in wet soils.

SCIENTIFIC NAME:
Syringa villosa

COMMON NAME:
Late lilac

A somewhat coarse shrub with large elliptical leaves. It blooms later than the common lilac and the flowers are less attractive. Improved hybrids derived from the late lilac are called Preston lilacs. The late lilacs are less prone to suckering than the common lilac.

SCIENTIFIC NAME:
Ribes missouriensis 'Albol'

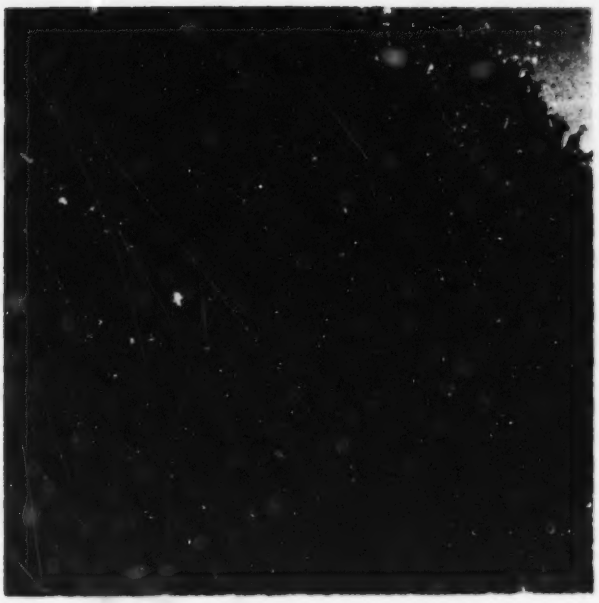
COMMON NAME
Albol currant

There are several representatives of the golden flowering currant. They include buffalo currant, the golden currant and the alpine currant, all of which are comparable to the albol currant. The alpine currant is the smallest and lends itself quite well to growing as a low hedge, up to 1.5 m tall. The abol currant appears to be very tolerant of 2,4-D. The other three currant varieties mentioned above are taller and display bright yellow flowers. Their fruit is edible. The currant varieties are all recommended for group plantings in the vegetable garden area.

SCIENTIFIC NAME:
Amelachier alnifolia

COMMON NAME:
Saskatoon

This well known native shrub is highly valued for its fruit. It is tall growing, 3 m tall, and produces clusters of white flowers. The fall color of the foliage is an attractive reddish brown. The Agriculture Canada Research Station at Beaverlodge has pioneered an extensive project for the improvement of the fruit. Improved strains carry the following names: Pembina, Smoky, Forestburg, and Northline. Saskatoons are recommended for use as a hedge, as fruiting shrubs in the garden and as individual specimens. They are well adapted to a wide range of growing conditions.



SCIENTIFIC NAME:
Prunus triloba multiplex

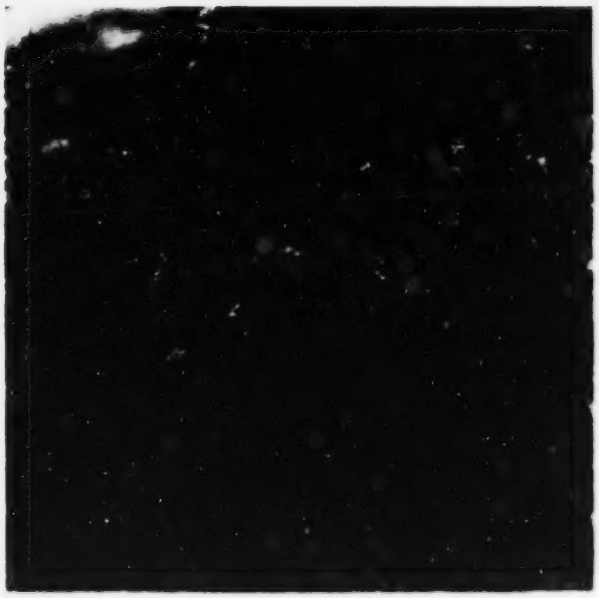
COMMON NAME:
Double flowering plum

This medium sized shrub, up to 2 m in height, has outstanding flowering ability. The large double flowers appear before the leaves. This shrub should be used for accent planting in protected locations. Since the double flowering plum is grafted, care should be taken to prevent the rootstock from overtaking the graft. The rootstock will have a tendency to send up suckers which appear to be more vigorous than the grafted part. All such suckers need to be cut back to ground level or at the base of origin.

SCIENTIFIC NAME:
Prunus japonica

COMMON NAME:
Korean (Chinese) bush cherry

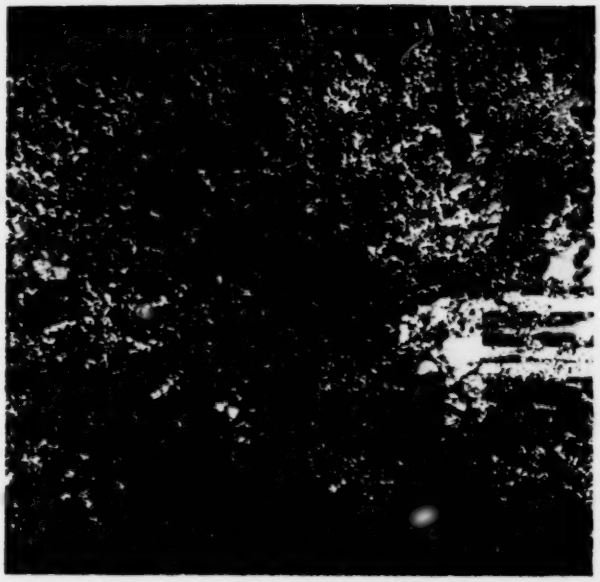
This small spring flowering shrub is useful for foundation planting. The fruit is deep red and edible. The Russian almond, *Prunus tenella*, is similar and can be used in comparable locations.



SCIENTIFIC NAME:
Prunus tomentosa

COMMON NAME:
Nanking cherry

A hardy, medium sized shrub which displays pinkish-white flowers early in the spring. The bright red fruit usually occurs in abundance and is recommended for jelly making.



SCIENTIFIC NAME:
Lonicera tatarica

COMMON NAME:
Tartarian honeysuckle

This tall, fast-growing shrub, up to 3 m in height, has flowers ranging in color from white to deep red. It is very hardy and can be used under a wide variety of growing conditions. With age the shrub becomes leggy, which means it will lose its lower foliage. Rejuvenation by cutting down all branches is a practical way of bringing it back to desirable proportions. The red berries of the honeysuckle are decorative but not edible.

SCIENTIFIC NAME:
Philadelphus lewisii 'Waterton'

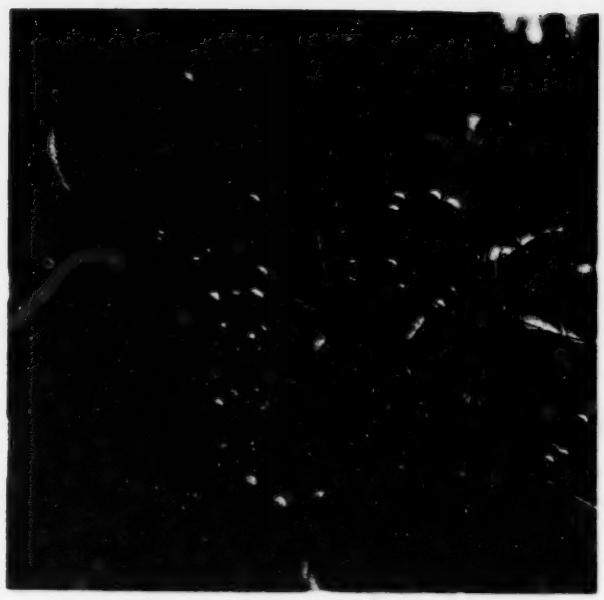
COMMON NAME:
Waterton mock orange

This medium sized summer flowering shrub is shade tolerant. It should be used in protected locations. The shrub suckers freely and needs annual thinning.

SCIENTIFIC NAME:
Cornus stolonifera

COMMON NAME:
Red osier dogwood

This is a medium sized native shrub which is very hardy. The red, shiny bark on the one and two-year old twigs offer a contrast with the winter landscape. Older branches lose their attractiveness and should be removed periodically. The white flowers and berries are rather inconspicuous. This dogwood is quite shade tolerant and lends itself to use as a hedge plant. Mature hedges are usually 1.5 m tall.



SCIENTIFIC NAME:
Rosa rugosa x hansa

COMMON NAME:
Hansa rose

There are a large number of named rose varieties available from garden centres and nursery outlets. On the basis of hardiness garden roses can be assigned to the following three classes:

Tender Roses: They include hybrid tea roses, which only survive the winter under highly protected conditions.

Half Hardy Roses: They include the climbing varieties. They may survive the winter and perform if given adequate protection and planted in a warm, sunny location.

Hardy Shrub Roses: The Hansa rose belongs to this group, and is one of the best hardy rose varieties for farmstead use. The flowers are deep pink and showy. The shrub is of medium height and requires regular pruning in order to remain vigorous.

SCIENTIFIC NAME:
Rosa spinossisma altaica

COMMON NAME:
Altai rose

This very hardy small shrub has numerous creamy white, single flowers.

SCIENTIFIC NAME:
Rosa acicularis var. 'Hedge Rose'

COMMON NAME:
Hedge rose

This selection was made at Brooks from a row of plants grown as examples of Alberta's floral emblem. It is native to all of the northern plains. Canadian rose breeders used the plant in early breeding work. Few are found in cultivated areas as specimen plants.

SCIENTIFIC NAME:
Spiraea bumalda x 'Froebelii'

COMMON NAME:
Froebel's spirea

The spireas are a well-known group of mainly small growing flowering shrubs about 75 cm tall. They are suitable for planting close to buildings and in group plantings in borders. These shrubs need protection from prevailing winds and perform best in full sunshine. Froebel's spirea is a summer flowering shrub with reddish flowers.

SCIENTIFIC NAME:
Spiraea media sericea

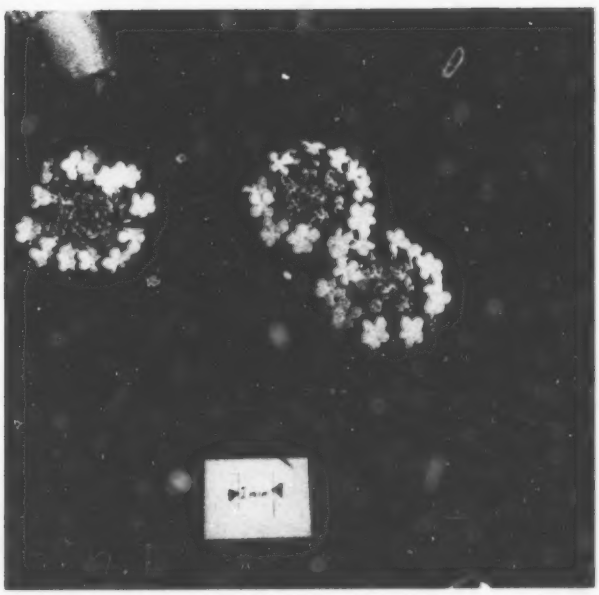
COMMON NAME:
Oriental spirea

This small shrub has white flowerheads that appear early in the season. The best known white spring flowering spirea is bridal wreath spirea, *Spirea vanhouttei*.

SCIENTIFIC NAME:
Viburnum trilobum

COMMON NAME:
Highbush cranberry

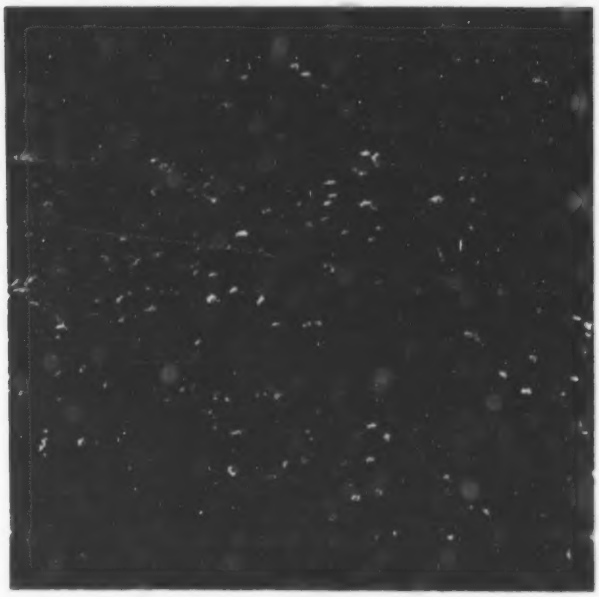
This is a tall-growing shrub up to 2 m tall with many desirable landscape features. It is tolerant to shade and produces large creamy white flowerheads, which develop into bright red clusters of edible berries. In the fall the foliage changes from green to scarlet. The nannyberry (native to Manitoba) and the European varieties 'wayfaring tree' and 'European highbush cranberry' are comparable to the American highbush cranberry, although not quite as hardy.



SCIENTIFIC NAME:
Potentilla fruticosa

COMMON NAME:
Shrubby cinquefoil

This plant belongs to a group of small shrub selections, up to 75 cm tall, many of which are native to the dryland prairies. It is very drought resistant and needs a sunny location. Hence, the plant is very useful for foundation planting on the south side of buildings. The flowers, which vary from white to bright yellow, appear during midsummer. The shrub continues flowering until late in the fall.

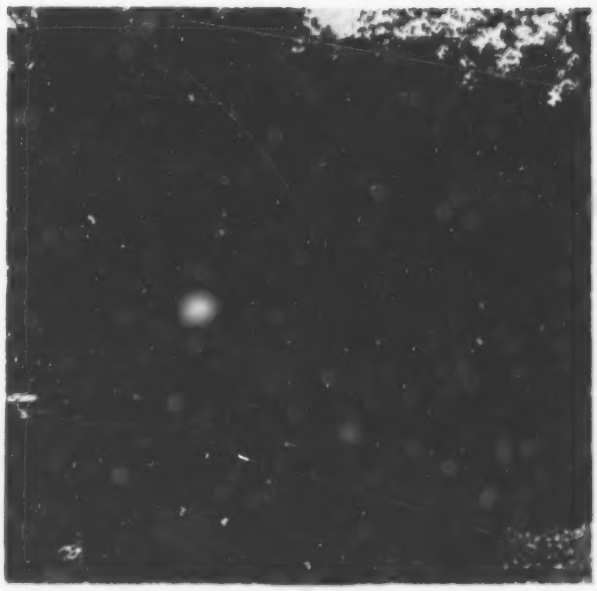


SHRUBS WITH SPECIAL FOLIAGE FEATURES

SCIENTIFIC NAME:
Sambucus racemosa

COMMON NAME:
Red elder

Red elder is a tall-growing shrub, up to 2 m tall, with coarse foliage. Although tipkill of the fast-growing branches is common, this shrub is hardy and able to withstand repeated pruning. Flowers are inconspicious but the red berries are quite decorative. The shrub is very useful for tall screen plantings.



SCIENTIFIC NAME:
Sambucus aurea

COMMON NAME:
Golden elder

This shrub is very similar to the red elder, but even more susceptible to winterkill. Since its golden yellow foliage is outstanding, the plant is often used where contrasting foliage colors are desired. Although elders adapt quite well to shade, the golden elder will lose its bright yellow color if grown in a shady location.

SCIENTIFIC NAME:
Caragana arborescens 'Lorbergii'

COMMON NAME:
Fernleaf caragana

This variety of the common caragana has lace-like foliage and is appreciated for that feature. It is of medium height with wide spreading branches. Used as an accent plant, the fine textured foliage creates interest. Similar to the common caragana, this plant requires full sunshine and is well adapted to dry sites.

SCIENTIFIC NAME:
Cornus alba 'argenteo marginata'

COMMON NAME:
Silver-leaved dogwood

This small shrub has creamy white edges around the leaves. Because it suffers from winter dieback, it should be used only in well protected locations. It is an excellent plant for creating contrast in group plantings.

SCIENTIFIC NAME:
Physocarpus opulifolius luteus

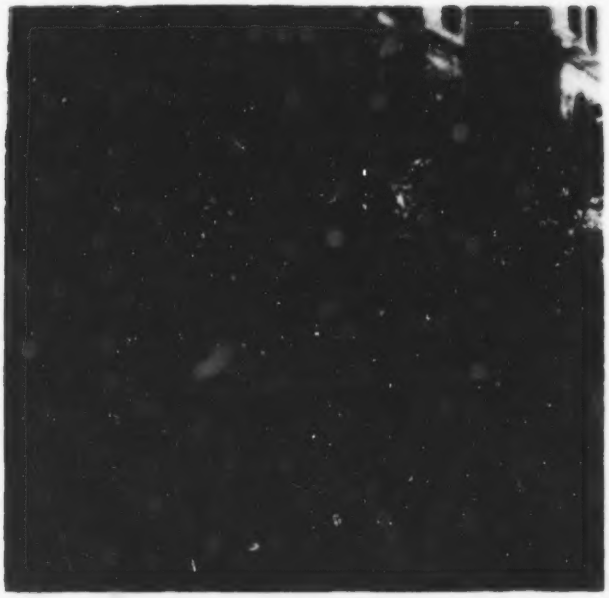
COMMON NAME:
Golden ninebark

When grown in full sunshine, this medium-sized shrub displays golden yellow foliage. It suffers somewhat from tip-kill during the winter and should be used on wind protected sites.

SCIENTIFIC NAME:
Prunus cistena

COMMON NAME:
Purple-leaved sandcherry

This small shrub with dark reddish-brown foliage is subject to winterkill, therefore, its successful use is limited to well protected planting sites. The red-leaved Japanese barberry, although not related to this sandcherry, served the same ornamental purpose because of its red leaved foliage. However, because the barberry is a host to the rust which affects cereal crops its distribution is now prohibited.



SCIENTIFIC NAME:
Eleagnus angustifolia

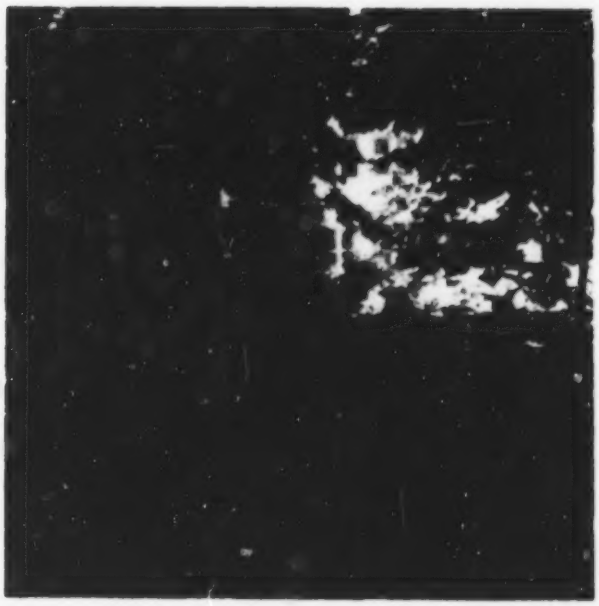
COMMON NAME:
Russian olive

The Russian olive is a small shrublike tree. Its main feature is the color of its foliage. The leaves are ellipitic in shape, light green above and downy beneath. The black stems contrast strongly with the silvery white foliage. Russian olives prefer the southeastern part of Alberta. If used elsewhere they should be planted in a protected location.

SCIENTIFIC NAME:
Hippophae rhamnoides

COMMON NAME:
Sea buckthorn

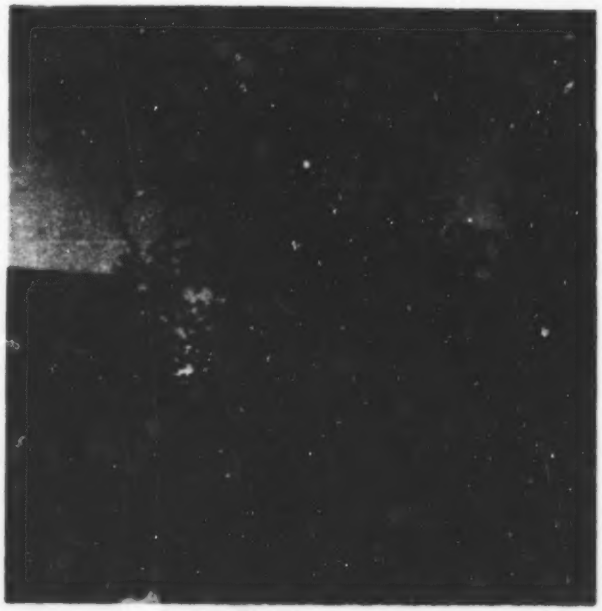
This buckthorn is a large shrub with silvery white foliage. The orange colored berries which appear in abundance on the female plants are another outstanding landscaping feature. The fruit remains on the shrub because birds do not seem to like it. The plant is very drought resistant and is recommended for use on alkaline soils.



SCIENTIFIC NAME:
Shepherdia argentea

COMMON NAME:
Silver buffaloberry

The silver buffaloberry is a native shrub of the Canadian prairies. The flowers are inconspicuous but the reddish orange berries add an interesting touch to the landscape value of this medium sized shrub. Its main merit for landscaping is the color of its silver white foliage and its irregular almost erratic, branching habit. Birds readily eat the fruit. The shrub creates a contrast in foliage colors when used with green foliage plants.

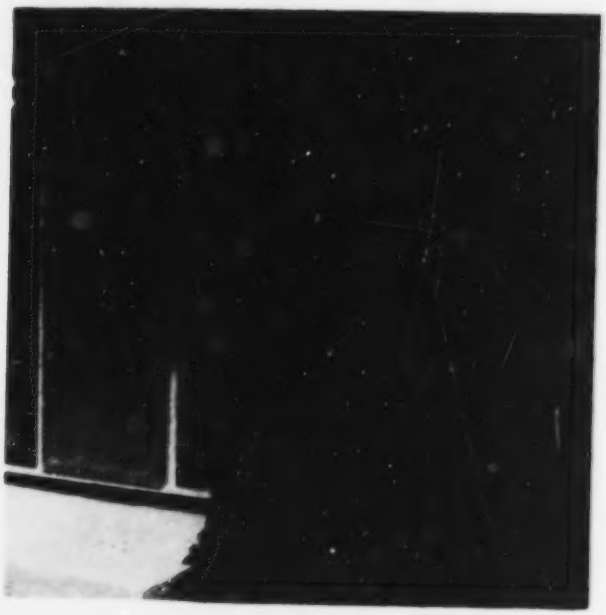


CLIMBERS

SCIENTIFIC NAME:
Parthenocissus quinquefolia

COMMON NAME:
Virginia creeper

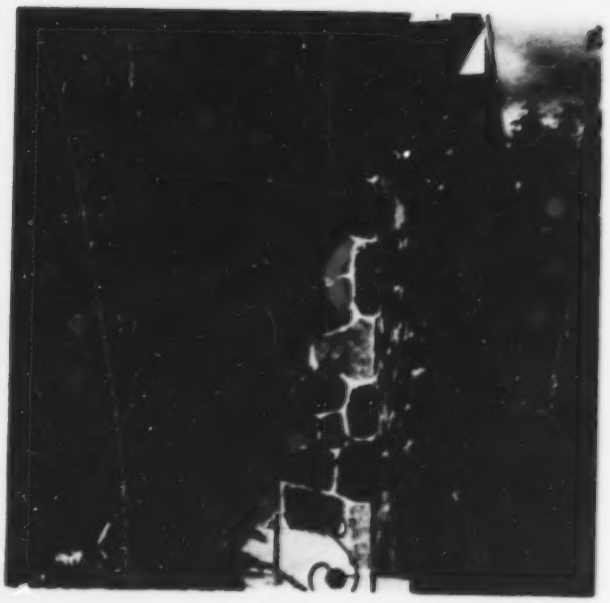
Virginia creeper is a vine with coarse glossy green foliage. It grows rapidly, is suitable for dry locations and prefers a sunny exposure. One variety, the 'self climbing' Virginia creeper, does not need a trellis to climb on. The foliage turns reddish brown in the fall.



SCIENTIFIC NAME:
Clematis jackmanii

COMMON NAME:
Jackman clematis

Although clematis freezes back every winter in Alberta, it will climb to a height of 10 feet (3 m) the following season. It produces a mass of large purple or pink flowers. If given a trellis, proper soil conditions and a sunny location, this is a most rewarding herbaceous vine.



SCIENTIFIC NAME:
Lonicera x 'Scarlet Trumpet'

COMMON NAME:
Dropmore scarlet trumpet honeysuckle

This vine needs a trellis and some guiding in order to climb against a wall or a free standing post. It also needs a sunny and well protected location. The orange flowers appear later in the summer and the plant keeps flowering until late October.

HEDGES

SCIENTIFIC NAME:
Caragana arborescens

COMMON NAME:
Siberian pea shrub

This shrub is the most commonly used type of hedging on Alberta farmsteads. If kept as a trimmed hedge, the structure will form a neat space divider of light green foliage. It is most useful for dry, sandy locations.

SCIENTIFIC NAME:
Cotoneaster lucida

COMMON NAME:
Cotoneaster

This shrub is popular for hedges because it can be kept to a height of less than 4 feet (1.2 m) around residential sites. The shrub withstands repeated pruning and will recover quickly by forming new sprouts.

SCIENTIFIC NAME:
Caragana pygmaea

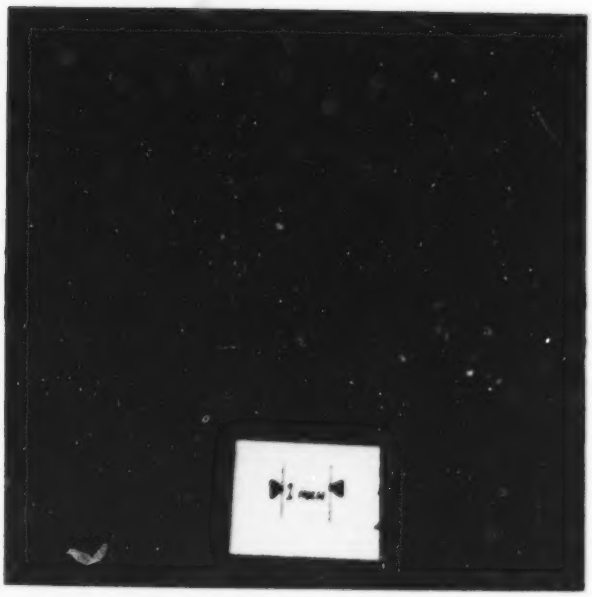
COMMON NAME:
Pygmy caragana

Pygmy caragana is a dwarf variety of caragana which is very suitable for a free-growing hedge (no shearing necessary) or for a pruned hedge. The texture of the foliage is fine and the branching habit is dense. Since the shrub can withstand repeated pruning, shaping is possible. However, a sheared hedge will not display many of the attractive flowers. The hedge is particularly useful for small landscape settings where space is at a premium.

SCIENTIFIC NAME:
Prinsepia sinensis

COMMON NAME:
Cherry prinsepia

This cherry is a low growing shrub which is very suitable for use as a free-growing hedge. It is drought resistant and will perform under poor growing conditions (shade and competition from other plants). The dark red fruit adds to its ornamental value.



SMALL EVERGREENS

SCIENTIFIC NAME:
Juniperus chinensis pfitzeriana 'Gold form'

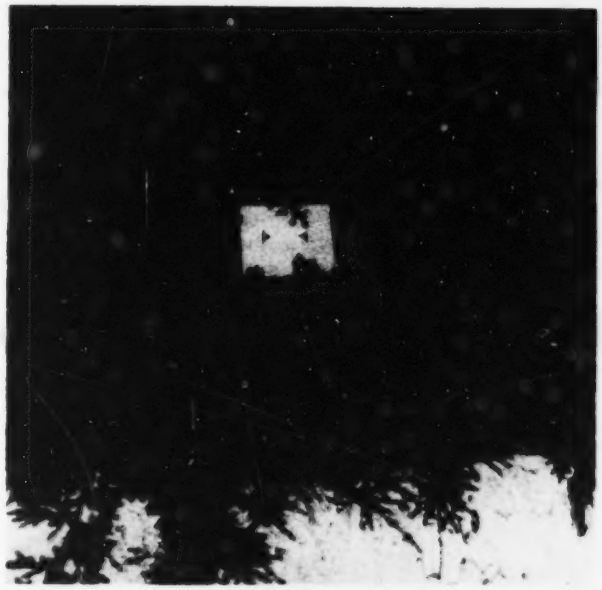
COMMON NAME:
Golden pfitzer juniper

The low growing junipers are most useful for landscaping on sites where space is limited. Many cultivars are available which differ in color, size and growth characteristics. At least a dozen are fully hardy. The golden pfitzer juniper is an attractive representative of this group. Exposure to full sunshine will bring out the yellow green color of the foliage. These low growing evergreens should be planted in groups.

SCIENTIFIC NAME:
Juniperus horizontalis 'Dunvegan Blue'

COMMON NAME:
Dunvegan blue juniper

This juniper is a selection of the native creeping juniper. It is a very low growing plant which has blue green foliage. During the winter the color changes to reddish purple and the plant loses some of its attractiveness.



SCIENTIFIC NAME:
Juniperus scopulorum 'Blue Heaven'

COMMON NAME:
'Blue Heaven' Rocky Mountain juniper

The Rocky Mountain juniper is an upright evergreen shrub of medium size (3 m tall) It is native to the Rocky Mountains south of Banff. Selections of the foliage with outstanding blue green needles have been made and the 'Blue Heaven' cultivar is a well known ornamental. This plant is drought resistant, requires a sunny location and is useful for its distinctive foliage color.

SCIENTIFIC NAME:
Pinus mugo

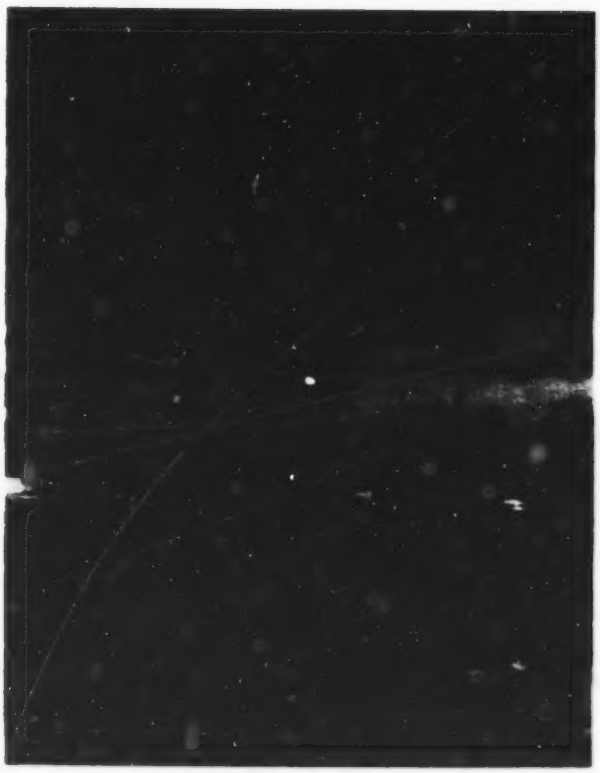
COMMON NAME:
Mugo pine

In addition to junipers, the mugo pine is probably one of the most commonly used dwarf trees for foundation plantings. There is a considerable difference in the types of mugo pines. Some grow to heights of 5 m while other strains stay dwarf at less than 1 m. Mugos originated in the mountain regions of Europe and are quite variable in growth habit. The most compact variety is the more desirable. If used in locations where height is limited, the size of the plant can be controlled by pinching the new growth as it emerges. Mugo pines are drought resistant but not shade tolerant.

SCIENTIFIC NAME:
Thuja occidentalis 'Pyramidalis'

COMMON NAME:
Columnar white cedar

The cedars originate in areas which have a much higher humidity than is normal in Alberta. Though they are very popular as foundation plantings, they do require extra care and protection. An ample moisture supply is required and the plants will benefit from special protection during the winter months (such as wrapping with burlap to prevent browning of the foliage). They are shade tolerant and suitable for a northern exposure. The narrow pyramid-like shape of the columnar cedar makes it very useful for landscape designs where vertical accents are required.



SCIENTIFIC NAME:
Picea abies 'Nidiformis'

COMMON NAME:
Nest spruce

This cultivar is a dwarf variety of the Norway spruce that reaches about 1 m when mature and is useful for specialty design such as in a rock garden.

GROUNDCOVERS

SCIENTIFIC NAME:
Arctostaphylos uva ursi

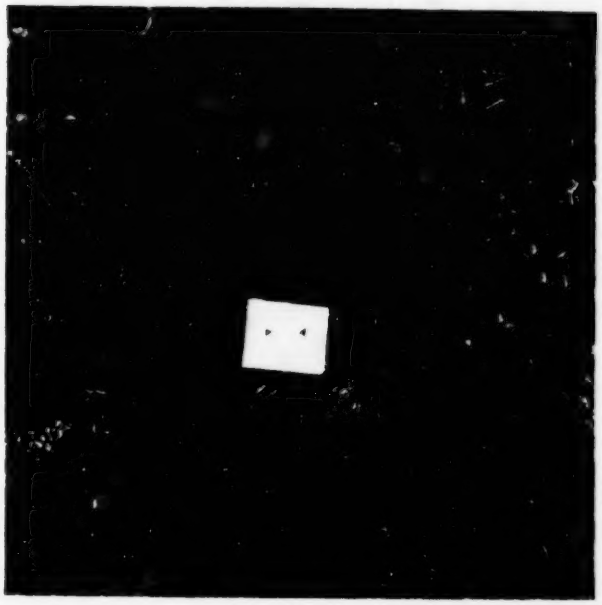
COMMON NAME:
Bearberry or kinnikinnick

Bearberry is a common ground-hugging creeper of the native mixed wood forest which is mainly confined to the dry areas. It is useful on shady sites and can be used in a rock garden design. It is slow growing and should be used in larger group plantings where there are no other herbaceous plants. Berries are bright red.

SCIENTIFIC NAME:
Vinca minor

COMMON NAME:
Periwinkle

Periwinkle is another creeping shrub which is useful for ground cover planting. It produces blue or white flowers, is fast-growing and shade tolerant.



GLOSSARY OF LANDSCAPING TERMS

Accent plant: A plant with some eye-catching features.

Acid soil: A soil 'sour in nature' as opposed to normal 'sweet soil', an acid soil has a pH of less than 7.0.

Alkaline soil: A soil with a high sodium content that interferes with the growth of most plants.

Background planting: Those plants in a landscape design which form the background of the display.

Border planting: The placing of vegetation in a landscape plan along the edge of open spaces.

Boulevard plantings: Plantings in narrow strips along roads.

Boulevard trees: A row of trees planted at regular intervals.

Drought resistant: Ability of the plant to survive periods of drought.

Foundation planting: Plantings of low growing shrubs immediately next to the walls of buildings.

Free-growing hedge: A hedge which is not pruned but left to grow undisturbed.

Ground cover: Low growing, usually creeping types of plants which cover the ground surface.

Group planting: A number of trees, or shrubs, planted together as one unit.

Leggy: The appearance of a shrub which has lost the foliage on the lower branches.

Pinching: Removal of young, succulent shoots.

Sandy soil: A soil consisting mainly of sand particles.

Screen planting: A dense grouping of plants with the main purpose of screening other features.

Shade tolerant: The plant will grow under shady conditions.

Shade tree: A tree planted for the purpose of providing shade.

Sheared: A plant or hedge which is clipped with hedge shears in a uniform way.

Shelterbelt: A planting of trees or shrubs for the purpose of protection against the climate.

Specimen tree: A tree used for ornamental purposes.

Spray drift: Vapor dispersed by a spraying device, and carried beyond the area intended to be sprayed.

Suckering: Development of rapidly growing shoots at the base of a plant.

Sunscalding: Damage, usually to the bark of a woody plant, caused by overexposure to sunlight.

Tip kill: Dying of the outer parts of one-year old branches.

Wind protected site: An area protected from the prevailing winds.

Winter die-back: Dying of branches during the winter.

Winter kill: See winter die-back.

RECOMMENDED READING

1. *Alberta Horticultural Guide*, Agdex 200/01. Available from the Alberta Agriculture Publications Office, 7000 – 113 Street, Edmonton, Alberta T6H 5T6.
2. *Alberta Agriculture Policy for Distribution of Trees and Shrubs* Agdex 277/870-1. Available from Alberta Agriculture Publications Office, 7000 113 Street, Edmonton, Alberta T6H 5T6.
3. *Planting Farm, Field and Roadside Shelterbelts in Alberta* Agdex 276/22. Available from Alberta Agriculture Publications Office, 7000 – 113 Street, Edmonton, Alberta T6H 5T6.
4. *Shelterbelts in Alberta* Agdex FS 227/20-2. Available from Alberta Agriculture Publications Office, 7000 – 113 Street, Edmonton, Alberta T6H 5T6.
5. *Native Trees of Canada*. Available for a fee from Queen's Printer, Ottawa.
6. *Woody Ornamentals for the Prairie Provinces*. Available for a fee from the Faculty of Extension, University of Alberta, Edmonton, Alberta T6G 2G4.
7. *Chemical Weed Control in Shelterbelts*. Available from Canada Agriculture, Information Services, Ottawa K1A 0C7.
8. *Farmstead Planning*. Available from Agriculture Canada, Information Services, Ottawa K1A 0C7.

QUICK GUIDE OF PLANT CHARACTERISTICS

Type of Plant		Mature Size			Flowering Habits
		Height feet (metres)	Spread feet (metres)		
TALL SHADE TREES Coniferous		60 (18)	20 (6)		inconspicuous
		50 (15)	20 (6)		inconspicuous
		45 (14)	20 (6)		inconspicuous
		45 (14)	20 (6)		inconspicuous
		40 (12)	15 (4.5)		inconspicuous
		40 (12)	25 (7.5)		inconspicuous
TALL SHADE TREES Deciduous		50 (15)	15 (4.5)		catkins
		50 (24)	50 (15)		catkins
		70 (21)	50 (15)		catkins
		35 (11)	10 (3)		catkins
		50 (15)	50 (15)		catkins
		35 (11)	30 (9)		catkins
		35 (11)	30 (9)		catkins
		45 (14)	30 (9)		catkins
		40 (12)	20 (6)		catkins
		45 (14)	25 (7.5)		catkins
		70 (21)	50 (15)		inconspicuous
		35 (11)	35 (11)		inconspicuous
		50 (15)	30 (9)		inconspicuous
		35 (11)	20 (6)		inconspicuous
		40 (12)	20 (6)		catkins
		40 (12)	25 (7.5)		small aromatic flowers
		45 (14)	35 (11)		inconspicuous
SMALLER SHADE TREES		15 (4.5)	10 (3)		inconspicuous

[1]Shade Tolerance
high = tolerant to shade
medium = can withstand some shade
low = intolerant to shade

[2]Moisture Requirements
high = the plant cannot withstand drought
medium = the plant will survive while exposed to short periods of low moisture
low = the plant can survive drought conditions

[3]Winter Hardiness
hardy = the plant will survive under extreme climate exposure
sensitive = the plant might experience winter damage
needs protection = the plant does not survive unless given special care during the winter

	Foliage[5]		Undesirable Features
	Summer	Fall	
	short needles		These trees need a wide base and do not lend themselves to excessive pruning
	stiff needles		
	long needles		
	long needles		
	very long		
	short needles	needles turn yellow	
	dark green shiny	golden yellow	The female selections shed fluff. Poplars are fast growing but often short on lifespan
	dark green shiny	golden yellow	
	dark green shiny	golden yellow	
	dark green shiny	golden yellow	
	dark green shiny	retains foliage in fall	
	dark green shiny		
	dark green shiny	golden twigs in winter	
	foliage silvery white		
	dark green shiny		Birch suffers often from top dieback
	weeping branches		
	dark green shiny		Susceptible to Dutch elm disease
	dark green shiny		Main structure breaks easily
	dark green shiny	attractive yellow fall color	Foliage emerges late in spring and drops early in fall
	dark green shiny		
	dark green shiny	red brown	Slow growing. Does not prove always hardy
	dark green shiny		
	dark green shiny	red brown	Attracts aphids and drops honey dew
	dark green small leaf	red	Does not develop into a single stem tree

[4]Soil Preference
loam – the plant prefers a rich loam type soil
sandy – the plant prefers a sandy soil
organic – the plant prefers a soil with high humus content
indifferent – the plant will grow under a wide variety of soil conditions

[5]Foliage
Only features of outstanding color and shape are mentioned

[6]All these trees have coarse foliage in different shades of green

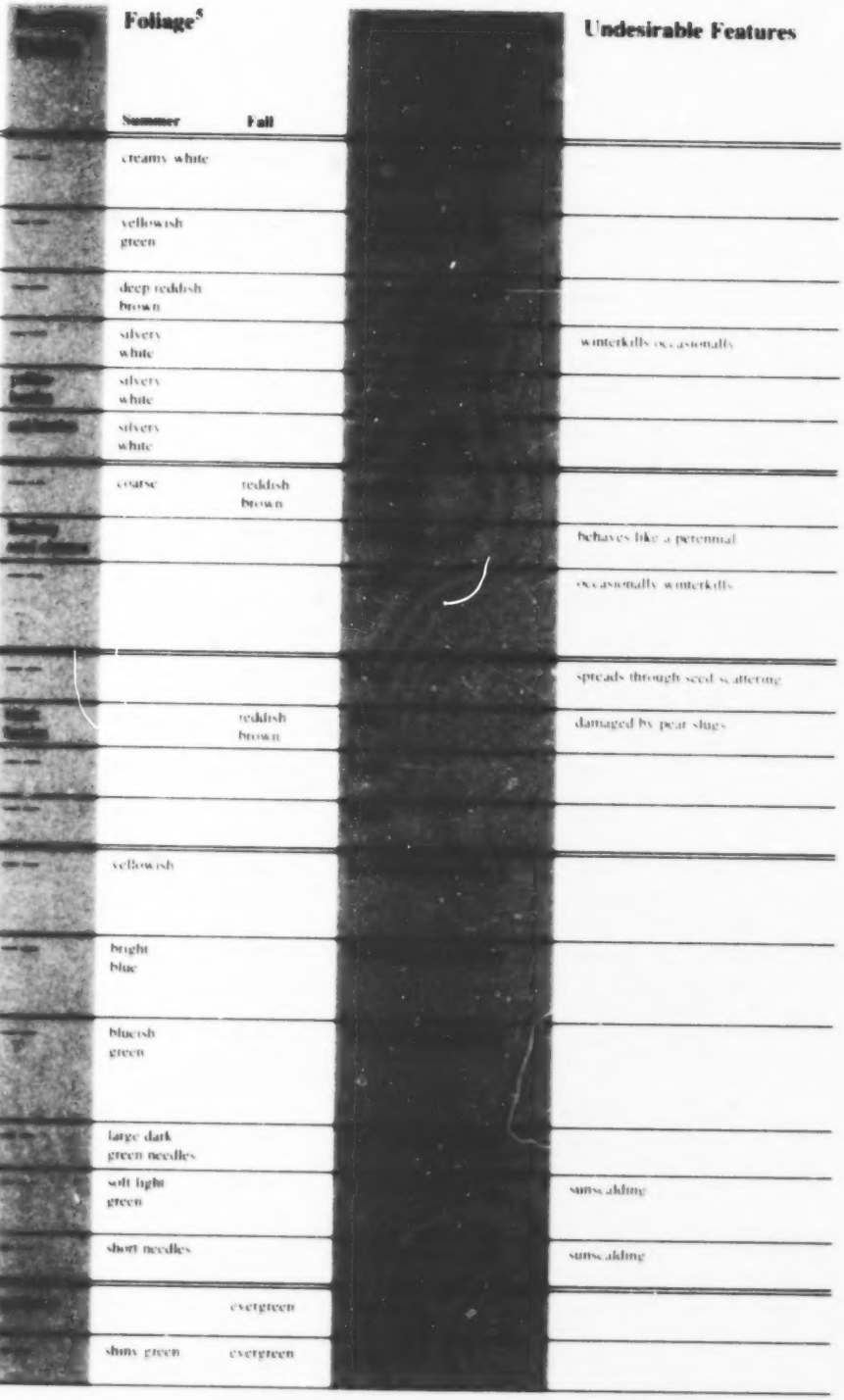
QUICK GUIDE OF PLANT CHARACTERISTICS (continued)

Type of Plant		Mature Size			Flowering Habits
		Height feet (metres)	Spread feet (metres)		
SMALLER SHADE TREES continued		25 (7.5)	12 (3.5)		showy white
		25 (7.5)	12 (3.5)		showy white
		25 (7.5)	15 (4.5)		showy creamy white
		25 (7.5)	20 (6)		showy white
		20 (6)	15 (4.5)		abundant white
		25 (7.5)	15 (4.5)		white clusters
		25 (7.5)	20 (6)		white
		25 (7.5)	20 (6)		from pink to red
FLOWERING SHRUBS		10 (3)	8 (2.5)		purple clusters
		10 (3)	8 (2.5)		purple clusters
		6 (2)	5 (1.5)		yellow showy
		10 (3)	6 (2)		white showy
		6 (2)	6 (2)		pink showy
		3 (1)	3 (1)		
		6 (2)	6 (2)		pink
		10 (3)	8 (2.5)		from white to red
		5 (1.5)	5 (1.5)		white
		8 (2.5)	6 (2)		small white clusters
		8 (2.5)	6 (2)		large red single
		4 (1.3)	4 (1.3)		reddish clusters
		8 (2.5)	8 (2.5)		large white clusters
		4 (1.3)	4 (1.3)		small yellow
PLANTS WITH SPECIAL FOLIAGE FEATURES		10 (3)	8 (2.5)		greenish white inconspicuous
		8 (2.5)	8 (2.5)		
		6 (2)	6 (2)		yellow but showy

	Foliage[5]		Undesirable Features
	Summer	Fall	
	in midsummer foliage turns reddish	red	attracts aphids
	light green	red	
	dull green	red	susceptible to fire blight
	dull green	red brown	attracts aphids
	green	reddish	susceptible to fire blight
	green	brown	susceptible to fire blight
	some copperleaf varieties	reddish	susceptible to fire blight
	green		
	green		
		red	
		yellow	sprouting from below the grafting point
			spreading through suckering
		reddish brown	spreading through suckering
		deep red	
	fine textured		
	coarse		
	yellowish green		winterkills occasionally
	very fine textured		

QUICK GUIDE OF PLANT CHARACTERISTICS (continued)

Type of Plant	Mature Size		Flowering Habits
	Height feet (metres)	Spread feet (metres)	
PLANTS WITH SPECIAL FOLIAGE FEATURES (continued)	5 (1.5)	5 (1.5)	small white clusters
	7 (2.1)	6 (2)	
	4 (1.5)	4 (1.5)	small pinkish
	20 (6)	20 (6)	flowers inconspicuous
	15 (4.5)	12 (3.5)	flowers inconspicuous
	15 (4.5)	12 (3.5)	flowers inconspicuous
CLIMBERS	Climbing up to 90 (9)		flowers inconspicuous
	Climbing up to 10 (3)		large showy
	Climbing up to 10 (3)		large red
HEDGES	15 (4.5)	12 (4.5)	yellow
	7 (2.1)	7 (2.1)	
	5 (1.5)	5 (1.5)	yellow abundant
	10 (3)	6 (2)	yellow
SMALL EVER-GREENS	2 (0.6)	6 (2)	
	1 (0.1)	10 (3)	
	10 (3)	4 (1.5)	
	5 (1.5)	6 (2)	
	15 (4.5)	5 (1.5)	
	2 (0.6)	5 (1.5)	
GROUND COVERS	1 (0.1)	spreading	small pinkish flowers
	1 (0.1)	spreading	purple or white



	Foliage[5]		Undesirable Features
	Summer	Fall	
	creamy white		
	yellowish green		
	deep reddish brown		
	silvery white		winterkills occasionally
	silvery white		
	silvery white		
	coarse	reddish brown	
			behaves like a perennial
			occasionally winterkills
			spreads through seed scattering
		reddish brown	damaged by pear slugs
	yellowish		
	bright blue		
	blueish green		
	large dark green needles		
	soft light green		sunscalding
	short needles		sunscalding
		evergreen	
	shiny green	evergreen	

POOR

QUALITY

ORIGINAL